Social and Climate Budget Tagging: Insights from Indonesia

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Table of Contents

LIST OF FIGURE

LIST OF ABBREVIATIONS

BKF	: *Badan Kebijakan Fiskal* (Fiscal Policy Agency)
BPS	: *Badan Pusat Statistik* (Statistics Indonesia)
CBT	: Climate Budget Tagging
CEQ	: Commitment to Equity Institute
CPEIR	: Climate Public Expenditure and Institutional Review
CSO	: Civil Society Organization
I4CE	: Institute for Climate Economics
IADB	: Inter-American Development Bank
IMF	: International Monetary Fund
JETP	: Just Energy Transition Partnership
NGO	: Non-Governmental Organization
OECD	: Organization for Economic Co-operation and Development
PODES	: *Potensi Desa* (the Village Potential Census)
R&D	: Research and Development
SCBT	: Social Climate Budget Tagging
SDG	: Sustainable Development Goals
SUSENAS	: *Survei Sosial Ekonomi Nasional* (the National Socioeconomic Survey)
UNDP	: United Nations Development Program

Executive Summary

Attention is growing to the need to tackle climate and social issues jointly. Indeed, both climate change and climate policies affect social issues such as poverty, inequality, or access to healthcare. A well-known example is that of carbon pricing, a climate policy which can have regressive effects in some contexts. As another example, climate change induced heatwaves are disproportionately likely to impact poorer individuals who typically have more constrained access to healthcare, physical jobs in outdoor conditions, and through indirectly driving up food prices. To foster an effective and sustainable transition to low-carbon and resilient economies, policymakers need to ensure individuals do not lose more from climate policies than they already lose from the effects of climate change, but instead benefit from them.

I4CE has developed a tool to help policymakers identify climate policies in their national budgets with likely social co-benefits: the Social Climate Budget Tagging (SCBT). Based on Climate Budget Tagging (CBT) methodologies which are increasingly used by Ministries of Finance worldwide, the SCBT highlights the likely social effects of climate-related budgetary measures. It allows users to identify climate policies to which more public resources should be dedicated - those with likely positive social effects -, and budget measures with positive or negative climate effects as well as with likely negative social effects. These measures should typically be removed, diminished, or individuals should be compensated for their effects.

Initially developed on the basis of France's 'Green Budget', the SCBT was refined, adapted and applied to Indonesia's 2021 Climate Budget Tagging. The application of the SCBT reveals that all climate measures in Indonesia have significant social effects, whether positive or negative. More specifically, it delivers insight on 12 climate policies to which particular attention should be paid, given their high social effects: climate and social 'hotspots'. Fiscal incidence analysis — which is used to identify individuals, households, communities, and activities likely to experience positive or negative impacts of the execution of fiscal policies (taxes and transfers) — combined with the SCBT helps understand how measures in the CBT affect welfare, poverty, and inequality at the microeconomic level. Using these individual — or household-level impacts, incidence analysis can

estimate the relationship between policies in the CBT, climate and social 'hotspots', and economy-wide social welfare indicators like the rate of poverty and vulnerability or income inequality.

Uptake of the SCBT in Indonesia is particularly relevant in the context of the recently announced Just Energy Transition Partnership (JETP) and other climate justice agreements. It also greatly extends the first version, developed in and for France; since the context and challenges faced by these two countries are radically different, embarking them both makes SCBT fit for a wide variety of countries and contexts. The SCBT methodology, user guidelines, and the tool are available as annexes to this report.

Introduction: extending Climate Budget Tagging to include social considerations

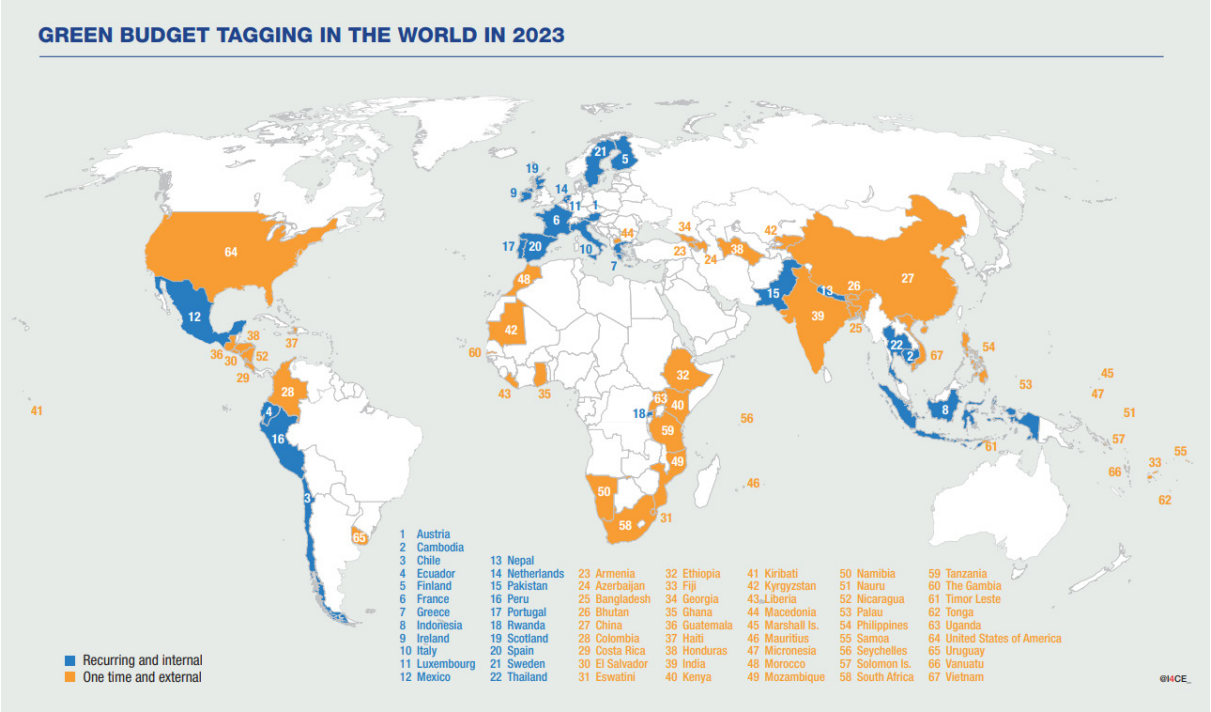
Climate Budget Tagging, or CBT, is a green budgeting tool[1] which consists of scanning national budgets and identifying all budget items with climate mitigation and climate adaptation impacts. Results from CBT can broadly serve four objectives: 1: facilitate access to international climate finance (e.g., through reporting on public projects underlying green bonds), 2: improve transparency on the public action on climate change, 3: ensure the consistency of budgets across ministries and with national climate action plans, and 4: improve the effectiveness of spending, particularly toward climate-friendly measures. Ensuing from these objectives, methodologies for CBT vary. Some only seek to identify budget items with positive climate impacts while others assess measures with positive and negative impacts. Some focus on budgetary expenditure, while others also consider tax revenue, or tax expenditure.

Over 60 countries have implemented CBT initiatives since 2012 (see Figure 1). Early adopters - including Indonesia[2] - often did so with the support of the United Nations Development Programme (UNDP) through the Climate Public Expenditure and Institutional Review (CPEIR) framework (UNDP, 2015). Today, a number of other institutions support the implementation of CBT or green budget tagging - an extension of CBT which considers not only climate impacts, but also other environmental impacts of budget measures. Notable institutions include the OECD, the Inter-American Development Bank (IADB), the World Bank, the Coalition of Finance Ministers for Climate Action, and the European Commission.

[1] For more information on green budgeting, please see: https://www.i4ce.org/en/projet/green-budget/

[2] See https://www.climatefinance-developmenteffectiveness.org/sites/default/files/documents/03_31_17/manualBudgetReport.pdf and https://www.climatefinance-developmenteffectiveness.org/sites/default/files/documents/03_02_15/Indonesia_MFF_report.pdf.

Figure 1 Map of countries which have undertaken green budget tagging



Source: I4CE 2023

With their climate lens, CBT exercises often overlook the intersection of climate issues with social issues. Yet, considering both is important to foster inclusive, sustainable climate action.[3] Climate policies have social effects that should not be neglected when preparing the budget. An increase in transport or fossil fuel prices induced by taxation, for example, can disproportionately affect lower-income households, and trigger political movements as the one seen in Ecuador in 2019. The negative social effects of climate policies should systematically be considered and compensated for where possible. On the other hand, there are social benefits associated with climate policies such as investment programs for sustainable agriculture that can and should be maximized by budget decision-makers.

International organizations have started developing budget-tagging exercises that consider climate and social issues, and NGOs have been calling for the inclusion of social issues in CBT.[4] The UNDP has added poverty reduction and gender inclusion in the climate budget tagging methodologies for some countries particularly affected by these issues (Mukherjee et al., 2014). One of the latest climate budget tagging conducted in Timor Leste with the support of the UNDP evaluated the amounts of climate spending in social areas such as education and access to transportation.[5] Sustainable Development Goals (SDG) budgeting has been supported by the UNDP, the IMF, the European Commission, and others[6]. At the country level, New Zealand has been implementing a well-being budgeting (Government of New Zealand, 2019), and Ireland has been implementing equality budgeting (OECD, 2021).

In 2021, I4CE developed a tool to include social considerations in existing CBT exercises: the Social Climate Budget Tagging (SCBT) tool (Metayer et al. 2022). Developed based on an extensive literature review, the SCBT was first applied on the 2021 French Green Budget which considers budget expenditure, tax revenue, and tax expenditure. Results revealed that 80% of

[3] https://www.i4ce.org/en/turn-green-budgets-social-climate

[4] https://www.oxfamfrance.org/wp-content/uploads/2019/09/Budget_vert_juste_Oxfam_RAC_ATD_Secours_catholique.pdf

[5] https://www.undp.org/sites/g/files/zskgke326/files/migration/tl/CPEIR-Report-Final.pdf

[6] See for example: https://sdgfinance.undp.org/sites/default/files/UNDP%20Budgeting%20for%20the%20SDGs%20-%20Guidebook_Nov%202020.pdf

budget items with climate impacts also have social effects, often concentrated on the social indicator of "health" and "poverty and income". Further, the tool helped identify 15 measures - 'hotspots' - corresponding to large amounts and with important climate and social effects calling for reform either to compensate for negative effects, or to maximize opportunities for co-benefits[7]. The tool features a template reformability table to be used by policymakers, suited to assess these climate and social 'hotspots'.

In the present report, I4CE revises the SCBT tool to make it relevant to the climate and social realities of other countries, notably developing countries, and applies it to Indonesia's 2021 CBT. Climate and social challenges faced by Indonesia, as an archipelagic developing country, are undeniably different from those faced by France. Compared to France's CBT which served as a basis for the first SCBT, Indonesia's CBT shows more concern for climate disasters and climate adaptation measures. Social issues pertaining to health, inequality, poverty, and employment are also more prevalent. On the basis of budget items included in Indonesia's CBT results, new elements were included in the SCBT to ensure national specific climate and social issues are correctly considered..

The report is organized as follows: a first section discusses Indonesia's experience with CBT, its methodology, results, and administrative process, and highlights opportunities for the application of the SCBT. The second section presents the SCBT methodology in detail and identifies improvements needed to best adapt to Indonesia's context. The third section presents SCBT results for Indonesia and details results of a fiscal incidence analysis conducted on a selection of climate and social 'hotspots'. The fourth section explores how SCBT results can inform budgetary decision-making through a process analysis. Finally, the fifth section concludes.

[7] Climate and social 'hotspots' are budget items contributing to or harming progress towards climate objectives which also have important social positive or potential negative effects. They are identified from SCBT results following a selection process which considers the amount of funding for each measure (against a threshold); the magnitude of climate impacts (whether the measure has direct and large-scale impacts); the magnitude of social effect (based on the number of social indicators impacted by each measure, the existence of direct or indirect effects, and the vulnerability of the impacted population); and the distribution of effects (based on the number of 'socio-economic determinants' impacted by each measure). The measures that meet the largest number of criteria are defined as 'hotspots'.

01
Climate Budget Tagging in Indonesia: why include social considerations?

As a country with large climate-related challenges, Indonesia has been an early adopter of analysis tools for its climate spending policy, especially Climate Budget Tagging.

Indonesia is both among the countries that stand to lose most from climate change consequences, and among the highest emitting developing countries. As an archipelagic country with nearly 50% of its land covered with forest, it is ranked in the top-third of countries for national climate risks (World Bank and ADB, 2021), including increased floods, droughts and heatwaves, sea-level rise, change in rain patterns affecting crop production, and decreased availability of freshwater threatening health. Mitigation challenges loom also large, due notably to the heavy reliance of its economy on coal and coal-produced electricity, and deforestation.

This translates into significant financing needs for the country's transition to a low-carbon, climate-resilient society. The Third National Communication of Indonesia estimated the financing needs, for mitigation and adaptation together, at over IDR 1000 trillion (nearly USD 80 billion). With the active support of UNDP, the country thus pioneered the adoption and development of various tools to close this financing gap. Notably, it started tracking its national climate spending from 2012 through Climate Public Expenditure and Institutional Reviews, which later developed into Climate Budget Tagging (CBT) exercises. Indonesia's CBT aims to identify and highlight activities in the planned national budget which have a positive climate impact. It covers budgetary expenditures by all line ministries.

Indonesia's CBT has been conducted internally and annually under the guidance of the Ministry of Finance since 2016 and is now fully integrated into the budget process. The latest methodological guidebook for Climate Budget Tagging, available here, has been published in 2021 by the Fiscal Policy Agency (BKF) of the Ministry of Finance. In 2021, Indonesia's CBT included 124 measures from 13 ministries/agencies, summing up to 104.8 trillion Indonesian rupiah (roughly 6.8 billion US dollars[8]) or 3.76% of the country's total budget (See Figure 2). This exercise has served as the basis for issuing various state bonds such as green bonds and green sukuk and was one of the supporting resources for the elaboration of Indonesia's Just Energy Transition Partnership, a USD 20 billion public-private finance support for the country's energy transition.

[8] Based on the conversion rate for January 2023

Figure 2: Expenses per category in Indonesia's 2021 Climate Budget Tagging (%)

Source: I4CE, based on data provided by the Indonesian Government (BKF)

Social considerations deserve some attention in the context of climate budget tagging, since the link between climate policy and social consequences is particularly acute in Indonesia.

On one hand, climate disasters have direct impacts on poverty, health and the access to basic needs; given the share of population living in dense, flood-exposed areas and Indonesia's vulnerable rural communities who depend strongly on natural resources for their economic activity and daily life, adaptation and disaster response policy (roughly 80% of climate-related spending) have a direct impact on various socio-economic aspects of life, throughout most of the country's provinces.

On the other hand, mitigation policies are faced with several challenges. Transport policies must deal with difficult access to public transport (and even private transportation) in rural areas. The remaining high reliance on fossil fuels for transportation, especially in such remote areas with no alternative in place yet, means that climate policies aiming to reduce this reliance need careful planning and design to support poor and vulnerable communities in the transition, without widening the already yawning urban-rural divide. On a different perspective, the weight of the fossil fuel sector, especially coal and oil, will imply major economic shifts if the country is to reduce its mining output. As an example, preliminary analysis estimates that the onsetting JETP will result in 30,000 direct jobs less by 2040 in the coal mining sector –most of them unskilled workers who will need to relocate.

So far, CBTs have not reflected this concern. Discussions are constantly underway to improve the tagging methodology, notably on adaptation measures, and to introduce impact assessment for relevant measures. Recent years saw the development of new issue-responsive budget tagging including gender, education, health, and infrastructure development budget tracking**.** However, other social issues such as poverty, income inequality, access to basic needs and services, are not fully tracked under the current tagging system -although targeted strategies, initiatives, and programs are upheld by the government. Most notably, Indonesia has been performing specific assessments of the impact of government spending and taxes on poverty and inequality, with the support of the World Bank and the Commitment-to-Equity Institute[9], yet such exercises had not been bridged so far with a climate-sensitive budget analysis. Within the limited scope of Climate Budget Tagging, the joint work proposed here by I4CE and the Commitment to Equity Institute provides an easy overview of budget items with strong consequences on both climate and social indicators, whether positive or negative. The tool could easily be appropriated by a team within the Ministry of Finance or could be integrated in the existing IT system for budget tagging.

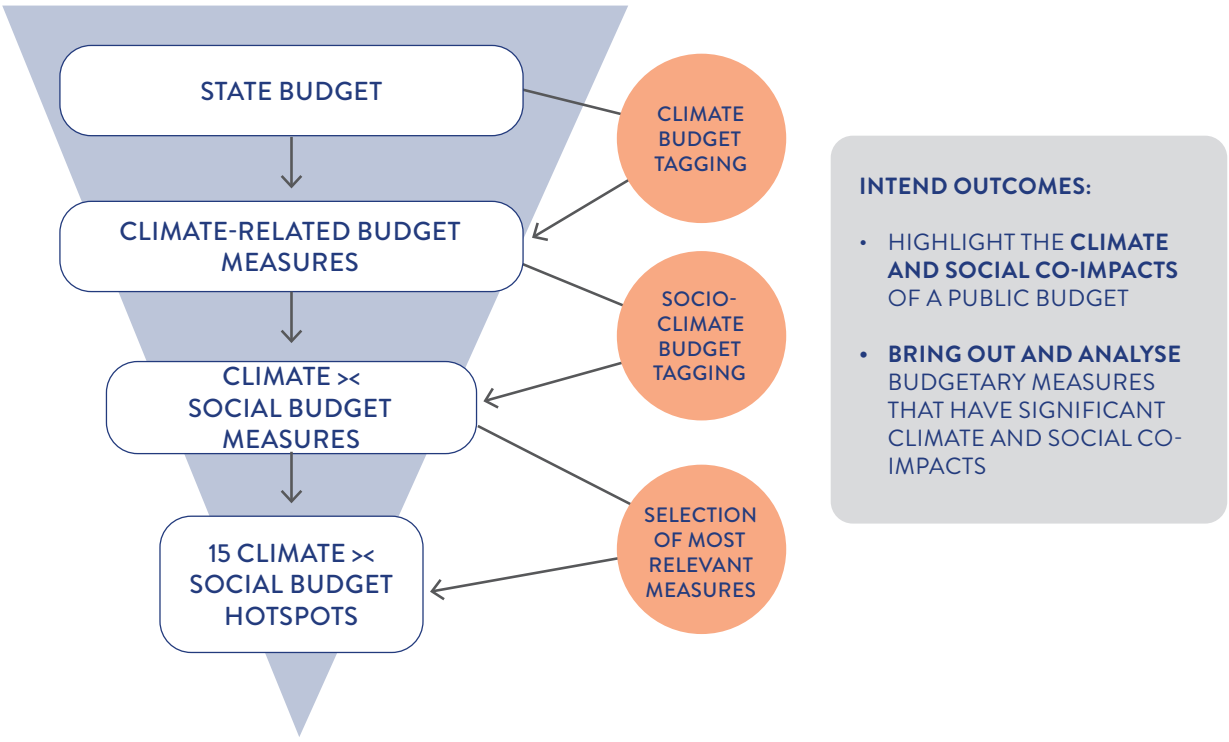
[9] World Bank and Indonesian Ministry of Finance, Badan Kebijakan Fiskal (BKF). 2020. "Revisiting the Impact of Government Spending and Taxes on Poverty and Inequality in Indonesia. World Bank. 2020.

02
Revising The SCBT for developing countries using the case of Indonesia

2.1 Social and Climate Budget Tagging: methodology

The SCBT tool can be applied to all climate budget tagging exercises. It is composed of three steps (Figure 3) which are detailed in the 'SCBT guidelines' attached as an annex to this report.

Figure 3: SCBT methodological process



Source: I4CE

The first step of the SCBT is based on an analysis grid bringing out the social effects of climate measures. The analysis grid of the SCBT is a data table, available here, which identifies the social benefits or potential social adverse side effects of budget items. It was developed through a literature review and includes about a hundred climate-related reference budgetary measures and their associated social effects. All types of budget items can be analyzed using the grid: budgetary expenditures, taxes, and tax expenditures. The analysis grid covers measures with both positive and negative impacts on climate mitigation and climate adaptation as well as five social effect indicators, which are listed below:

FIVE SOCIAL EFFECT INDICATORS

INCOME INEQUALITY;

POVERTY & INCOME;

EMPLOYMENT;

HEALTH;

ACCESS TO BASIC NEEDS AND SERVICES (ENERGY, CLEAN WATER, FOOD, INFRASTRUCTURE).

The first version of the analysis grid of the SCBT, developed on the basis of France's CBT, considers 8 climate-relevant economic sectors. They are shown in Table 1.

Table 1: Sectors considered in the SCBT for France

SECTOR
Energy
Energy consumption
Transport
Building
Agriculture
Social Measures
Natural disaster risk and management
Undiffrentiated sector

Source: I4CE

Six socio-economic determinants are also considered in the analysis grid of the SCBT, as certain socio-economic groups may be impacted differently by climate measures. These are age, gender, income level, household characteristics, job sector, and living area (urban or rural). Nonetheless, the magnitude and direction of social effects are not quantified by the analysis grid of the SCBT. Figure 4 provides an overview of the analysis grid.

Figure 4: Overview of the analysis grid of the SCBT on one example: support to renewable energy

Sector	Category	Subcategory	Budgetary measure	Code	Linked effects with other policies	Mitigation	Adaptation	Magnitude of climate impacts High / Low	Social co-benefits	Social adverse side-effects
Energy Production	Renewable Energy	Development or support to renewable energy projects (solar, wind, hydro power)	Exemples: Investments, tax exemptions, feed-in tariffs	EP_1	Opposite effects to fossil fuels support	Positive impacts	/	High	Health benefits; employment Impacts in RE sector; women employment; regional implications for workers, Job creation where limited employment opportunities; subsidies reduce energy prices, positive income impacts, especially for low-income households	If increased energy prices: regressive distributional impacts, impacts on poorer households, risk of increased energy poverty & associated health impacts, job losses in RE sector: population displacements

Social indicators	vulnerability	Social Indicators					Socio-economic determinants						Socio-economic determinants	Robustness Indicators	References
Yes/No	High/Low	Income Inequality	Poverty & Income	Employment	Health	Access to basic needs	Income	Urban/Rural Area	Job sector	Gender	Age	Other Household Characteristics	Yes/ No		
Yes	Low	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	+: several studies, gender & regional in OECD Ref -: Germany one example develop country	• Markkanen, S.,& Anger-Kraavi, A. (2019). Social impacts of climate change mitigation policies and their implications for inequality. Climate Policy. 19(7), 827-844. • Ürge-Vorsatz, Diana & Tirado-Herrero, Sergio & Dubash, Navroz & Lecocq, Franck. (2014). Measuring the Co-Benefits of Climate Change Mitigation. Annual Review of Environment and Resources. 39. 549-582. • Frondel, M., Sommer, S., & Vance, C. (2015). The burden of Germany's energy transition: An empirical analysis of distributional effects, Economic Analysis and Policy,Volume 45, 89-99. • OECD (2021), "The inequalities-environment nexus: Towards a people-centred green transition", OECD Green Growth Papers, No. 2021/01, OECD Publishing, Paris

Source: I4CE, 2023

To apply the analysis grid of the SCBT, each budget line included in the CBT should be matched with one or more lines from the analysis grid. From this, it is possible to compute the number and amounts of budgetary measures that have both climate and social effects; the number and amounts of budgetary measures that affect each of the social indicators and socio-economic determinants; and the number and amounts of budgetary measures from each sector that have both climate and social effects.

The second step of the SCBT is to identify 10 to 15 climate and social 'hotspots'. Climate and social 'hotspots' are budget items contributing to or harming progress towards climate objectives which also have important social positive or potential negative effects. They are identified from SCBT results following a selection process which considers the amount of funding for each measure (against a threshold); the magnitude of climate impacts (whether the measure has direct and large-scale impacts); the magnitude of social effect (based on the number of social indicators impacted by each measure, the existence of direct or indirect effects, and the vulnerability of the impacted population); and the distribution of effects (based on the number of 'socio-economic determinants' impacted by each measure). The measures that meet the largest number of criteria are the 'hotspots'. Figure 5 presents an overview of the 'hotspot' selection template. Their identification points at measures that should be reformed in priority to maximize climate and social co-benefits, or to compensate for potentially adverse - and often ill-known - social side effects.

Figure 5: Overview of the 'hotspot' selection template.

Budget line	Amount	Amounts >"threshold to set"?	Magnitude of climate impacts	Magnitude of social impacts Social indicators >=3?	Vulnerabilty	Unequal distribution Intensification Factors >=3?	Score
Development of Dams, Lakes, and Other Water Reservoir Structures	2,28486E+13	Yes	High	Yes	High	No	4
Connectivity Infrastructure Program	1,94985E+13	Yes	High	Yes	High	Yes	5
Development of Surface, Swamp and Non-Rice Irrigation Networks	9,94922E+12	Yes	High	Yes	High	No	4
Flood Control, Lava, Urban Main Drainage Management, and Coastal Protection	9,03322Ea12	Yes	High	Yes	High	No	4
Operation and Maintenance of Natural Resources, Infrastructure and Disaster	8,05172E+12	Yes	High	Yes	High	No	5
Provision of Proper Drinking Water	5,90059E+12	Yes	High	Yes	High	Yes	4
Formulation and Implementation of Technical Policy for Emergency Resources	4,00372E+12	Yes	Low	Yes	High	No	4
Provision of Access to Liveable Homes	3,71702E+12	Yes	High	Yes	High	No	5
Rail Transport Services	3,60918E112	Yes	High	Yes	High	Yes	5
Rail Transport Connectivity infrastructure	3,44202E+12	YeS	High	Yes	High	YeS	5
Groundwater and Raw Water Network Development	3,13297E+12	Yes	High	Yes	High	Yes	4
Forest Rehabilitation and Reclamation, Land Rehabilitation and Soil and Waste	2,84718E+12	Yes	High	Yes	High	No	3
Implementing Proper Sanitation	2,49827E+12	Yes	Low	Yes	High	No	5
Planning, Development and Supervision of Oil and Gas Infrastructure	1,113416.12	Yes	High	Yes	High	Yes	5
Rail Transport Safety and Security	9,70642E+11	Yes	High	Yes	Low	Yes	4
Irrigation Water Management For Agriculture	5,64403E+11	Yes	High	Yes	High	No	3
Planning, Development and Supervision of New Renewable Energy Infrastructure	3,62728E+11	Yes	High	Yes	Low	No	3
Area Management and fish Health	2,5555E+11	Yes	High	Yes	High	No	4
Geological Data, information, Recommendations and Services	2,48532E511	Yes	Law	Yes	Low	No	2
Establishment and Administration of Forest Areas	2,45287E+11	Yes	High	Yes	High	No	4
Implementation of Settlements and Buildings	2,40778E+11	Yes	High	Yes	High	No	4
Environmental Damage Recovery	2,38268E+11	Yes	High	Yes	High	Yes	5
Conservation Area Management	2,36493E+11	Yes	High	Yes	High	No	4
Forest and Land Flee Control	1,32163E511	Yes	High	Yes	Low	No	3

Source: I4CE, 2023

The SCBT and 'hotspot' selection can be complemented by a fiscal incidence analysis to gain detailed perspective on the microeconomic incidence of CBT measures, particularly 'hotspots'. Conducting a fiscal incidence analysis will require robust, granular, individual-, household- or group-level data on income and other household characteristics. It also requires in-depth knowledge of the "fiscal rules" which describe how expenditures reach individuals as cash or in-kind benefits and how revenue policies (taxes) create economic burdens for individuals. Finally, fiscal incidence requires administrative or budget-level data on fiscal magnitudes (for example, total revenues collected from a Value-Added Tax and total amounts disbursed as cash transfers in a grant scheme). Fiscal incidence analysis provides additional information to policymakers on how to best design policies to maximize or minimize their individual- and group-level positive or negative (respectively) impacts. Section 4 of this report provides an example of an exploratory fiscal incidence analysis of a collection of green expenditure policies identified by the application of the SCBT in Indonesia.

Finally, a reformability table further guides SCBT users seeking options to reform climate and social 'hotspots' to maximize co-benefits or address adverse side effects. The reformability table associated with the SCBT considers the climate and social goals of current policies and proposed reforms; potential climate or social adverse side-effects; public costs; public acceptability; and potential complementarity with other planned or projected reforms. It is presented in Figure 6, and can be applied to all measures identified as climate and social 'hotspots'.

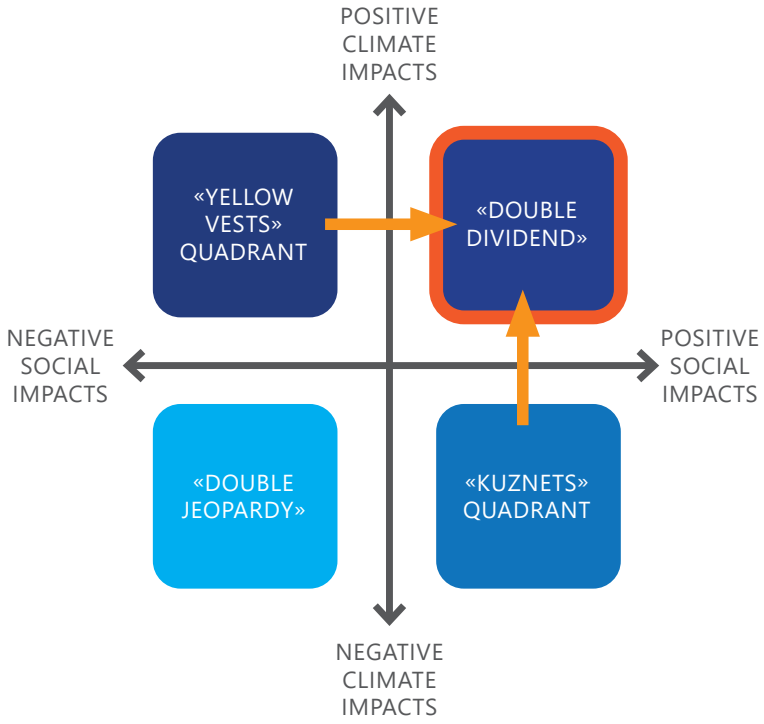
Figure 6: 'Hotspot' reformability table template

Budget Line					
Reference & Type of Measure		Amount	Short Description		
Social Indicators Intesification Factors			Main climate and Social Issues		
Reform proposition	Climate or social goal(s)?	Climate or social side-effect?	Public costs and/or benefits?	Public acceptability	Complementarity with another measure?

Source: I4CE

The reformability table should be filled for each 'hotspot' with knowledge of the national context and of the hotspot's specificities to ensure it helps trigger reflections about how to progress towards national climate and social objectives. Knowledge of the context is key to make reform propositions that will maximize climate and social co-benefits, and ensure the adverse social side effects of climate policies are avoided, diminished, and/or compensated for. The top right quadrant in Figure 7 represents an ideal situation which should be the aim of policy reforms. Quite often, such "double dividend" settings cannot be achieved through reforming one single policy, but rather approached through careful re-design of a whole policy package. Moreover, knowledge of context will help make reform propositions that align national climate, social, and development strategies.

Figure 7: Climate and social impacts of policies: a schematic view



Source: I4CE

Results from the SCBT and fiscal incidence analysis, along with reformability tables for 'hotspots' should be presented to key budget decision makers at relevant moments in the budget preparation. To identify these key actors and moments, it can be relevant to undergo a budget process analysis in the form of a case study. Section 4 of this report proposes to do so in the case of Indonesia.

2.2 Adapting the SCBT to Indonesia's context

France's case - on which the initial SCBT was developed - varies from the case of Indonesia on several levels: climate and social issues and structure of the Climate Budget Tagging. Generally, climate issues encountered in Indonesia predominantly pertain to adaptation, while they predominantly pertain to mitigation in France. These contextual differences are reflected in both countries' Climate Budget Tagging: France's climate expenditures largely target mitigation while Indonesia's target adaptation. Additionally, France considers budget expenditures that are neutral or run counter to climate objectives, as well as tax revenue and tax expenditure. Indeed, these types of budget items concentrate much of the State's action that is detrimental to mitigation objectives. On the contrary, Indonesia solely focuses on climate positive expenditure, reflecting different climate challenges. Social issues in both countries typically reflect those encountered in developing economies versus those encountered in developed economies.

The initial SCBT was applied to Indonesia's CBT to identify gaps ensuing from different national circumstances. On this basis, the SCBT was augmented to better fit Indonesia's and other developing countries' contexts. Additions to the SCBT are listed below, with titles of sectors, categories, and sub-categories in blue. They seek to address key development and climate challenges.

Adaptation: A new sector focusing on 'Adaptation-driven initiatives' was added to the analysis grid to cover the variety of adaptation measures found in Indonesia's CBT, and that are generally more present in developing countries than developed ones due to high climate risks.

The new sector is inspired by Hallegate et al. (2020) and has three sub-categories to cover three types of budget measures:

1) Assess disaster and climate risks and make information available: including measures able to ensure that the required information and knowledge related to climate risks are available to the public and policymakers (e.g.: research and disaster risk information disclosure);

2) implement protective infrastructure and urban planning: including investment in more resilient economic or social infrastructure as well as initiatives for better economic and urban planning for adaptation (e.g.: adaptation to rising sea levels, sustainable cities, new settlements, etc.);

3) Support better management of disaster risk and decrease social impact: including human capacity, equipment, tools, and infrastructure to cope with and prevent disasters as well as measures for social protection (e.g.: insurance, contingency funds, training, etc.).

Another sub-category related to adaptation investments was included in the group 'Undifferentiated Sector'. It covers any investment in adaptation that can directly benefit the private sector. An example is irrigation investment in agriculture or new boats for fishing, new infrastructure to avoid losses in the private sector.

Agriculture - Forest: two new sub-categories were included under the agriculture and forest sector of the SCBT to account for the fact that Indonesia's agriculture, forestry, and fishing industry represented 13.3% of the GDP in 2021.[10]

1) A new sub-category was included to the existing 'Forest and Ecosystem Management' category to consider initiatives to ensure property rights and solve environmental disputes. As reported in the literature, this is an important initiative to curb deforestation and incentivize sustainable forest management and production in a country that has 49% of its land area covered by forests[11] (Rome et al., 2018; Araujo et al., 2009; Miller et al., 2021).

2) In the existing category 'Support to farmers and the Agricultural Sector', a new sub-category was included to consider climate-related agricultural infrastructure to increase mitigation or resilience (irrigation system, water storage, etc.).

Capacity building and research: ttwo new categories were created to cover climate-related capacity building and climate-related research and development. Capacity building and R&D are needed to raise climate change awareness, prepare citizens and the workforce to protect themselves from climate disasters, and contribute to protecting economic sectors and activities vulnerable to climate change. Furthermore, knowledge creation and diffusion bring social positive externalities by increasing human capital and providing better access to basic services.[12]

[10] https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=ID

[11] https://data.worldbank.org/indicator/AG.LND.FRST.ZS?locations=ID

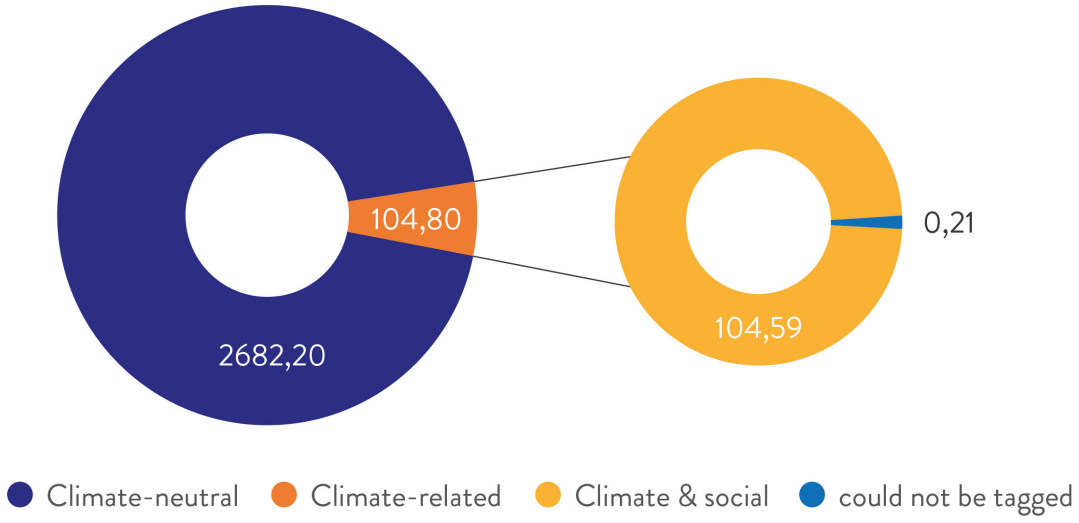
[12] Ver Chakavarty et al. (2019) ; Hoffman et al. (2020) ; Hoffman et al. (2017) ; Reich & Finkbeiner (2022) ; Viana-Lora & Nel-lo-Andreu (2021) and Barrera-Osorio et al. (2020).

03
Climate Budget Tagging: social co-benefits and adverse side effects in Indonesia

3.1 Results of the SCBT application in Indonesia

The application of the new SCBT on Indonesia's 2021 CBT reveals that every climate measure had at least one type of positive or potential negative social effect (see Figure 8). 99.8% of the CBT (in value) could be tagged using the new SCBT analysis grid. Only four measures could not be tagged: three associated with waste management and biodiversity which are not directly climate-related according to the SCBT. They represent 0.13% of the CBT. Another measure ('environmental policy') could not be tagged because too little information on its specifics was available.

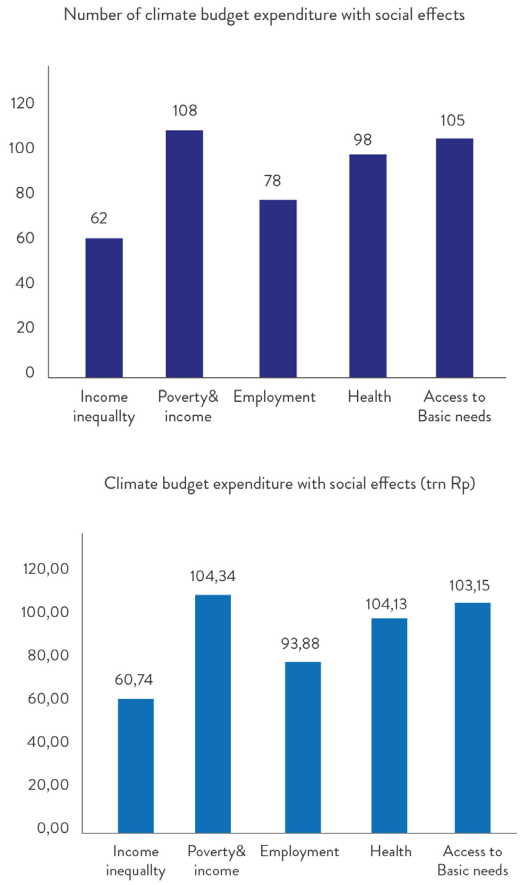
Figure 8: Shares of measures with climate only, or climate and social impacts in Indonesia's 2021 executed budget (Trillion IDR)



Source: I4CE, based on data provided by the Indonesian Government (BKF).

108 climate measures had effects on poverty and income, and 105 had effects on access to basic needs and services (see Figure 9). Climate measures with poverty and income effects in Indonesia's CBT generally tend to shield the population from climate disasters and events which would put them at risk of poverty, higher poverty, or reduced income. Yet, other measures can increase the price of goods and services in a relatively homogenous way across the population, increasing odds of poverty and generally diminishing disposable income. Many climate measures in Indonesia's CBT increase the supply of public services to all, including more vulnerable populations. An example is investments in clean transportation infrastructure.

Figure 9: Budget expenditure with social effects by social indicator in Indonesia's 2021 Climate Budget Tagging



Source: I4CE, based on data provided by Indonesia's Fiscal Policy Agency (BKF).

NB: Measures typically have more than one social effect.

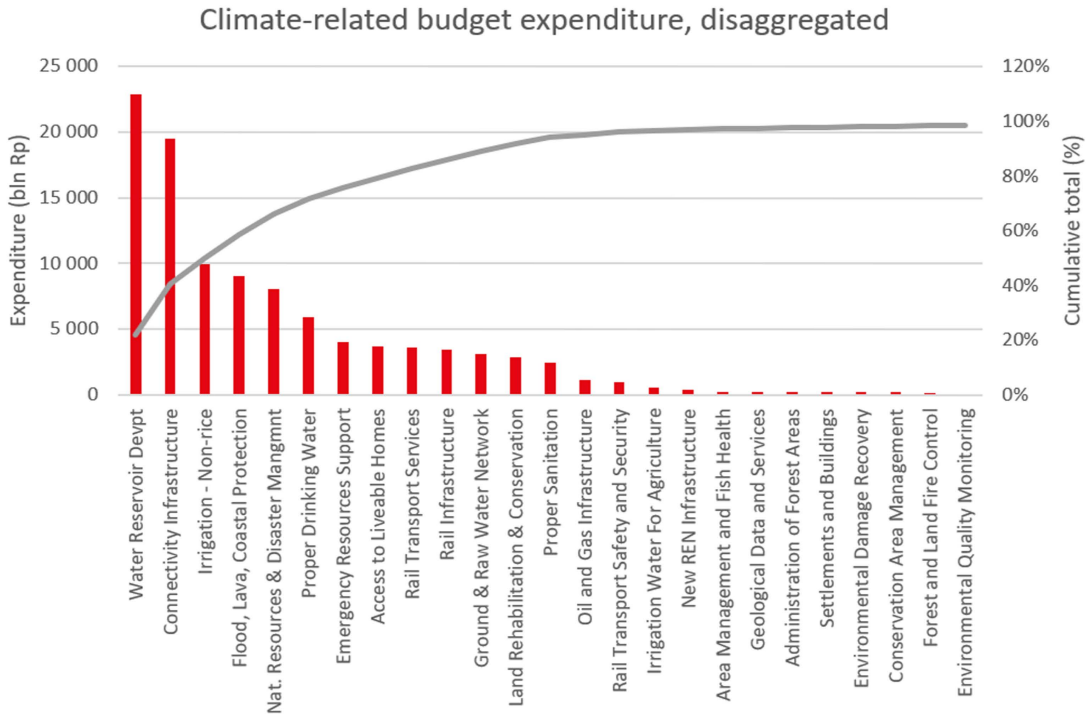
A number of climate measures also had potential positive effects on health, and positive or negative effects on employment. Positive effects on health come from measures leading to better air quality and less exposure to the negative impact of climate disasters (diseases spreading in times of floods, health effects of heatwaves, etc.). Effects on employment, whether positive or negative, come from measures leading to structural change towards a green economy: green jobs are created and hire workforce, but fewer jobs are available in carbon-intensive industries, which may in fact lay off some workers.

Several measures recorded in Indonesia's CBT have effects on more than one social indicator. For example, the Connectivity Infrastructure Program increases investment in cleaner rail and marine infrastructure. It potentially impacts all the listed SCBT social indicators: it might have positive effects on health through leading to less polluting transportation modes; positive effects on poverty and income, and employment if it increases access to economic opportunities; and positive effects on access to basic services as transportation infrastructures are essentially basic infrastructures. It might also have potential adverse social effects on the inequality dimension should the program focus on wealthier areas. Another example of a measure with effects on all social indicators is 'investment in the provision of proper drinking water'. The measure has inherent health benefits, and may foster employment and reduce poverty through freeing working-age adults from the task of collecting drinking water from distant collection points. The potential negative effects could be an increase in inequality if investments go only toward wealthier areas or if investments are captured by the private sector.

3.2 Climate and social 'hotspots' in Indonesia's CBT

Amounts recorded in Indonesia's CBT are highly concentrated in a few activities: 30 measures capture 98.9% of the budget (see Figure 10). On this basis, a threshold of 61.31 billion Indonesian rupiah is set to select climate and social 'hotspots'. Following the 'hotspot' selection methodology, the anticipated magnitudes of the climate and social effects of each budgetary measure above the threshold are identified, and scores are associated with the measures.

Figure 10: Budget distribution per activity in Indonesia's 2021 Climate Budget Tagging (25 main measures)



Source: I4CE, based on data provided by Indonesia's Fiscal Policy Agency (BKF). 5 activities make up roughly 60% of the whole expenditure tagged in Indonesia's CBT.

12 'hotspots' were identified in key sectors: public transportation, adaptation and disaster management, agriculture and forestry, and energy production. (See Table 2 for 'hotspots' details). These are measures which were given a score of 5 following the methodology, as well as three measures pertaining to disaster management which received a score of 4 as these are key to Indonesia's climate disaster risk reduction policy. These 'hotspots' amount to 57% of the total CBT for 2021, and have effects on the five social indicators considered in the SCBT. They notably have effects on the dimensions of income inequality, poverty and income, and health, even though most 'hotspots' (10 out of 12) affect all social dimensions of the SCBT.

Table 2: Climate and social 'hotspots' in Indonesia's 2021 Climate Budget Tagging

Ministry	Budget measure	Amount (bn Rp)	Amount>"threshold to set"?	Magnitude of Climate impacts	Magnitude of social impacts climate impacts		Unequal distribution of impacts	SCORE
					Social indicators >= 3?	Vulnerabilty	Intensification factors > = 3?	
PUPR - Public works and human settlements	Connectivity Infrastructure Program	19498,53	Yes	High	Yes	High	Yes	5
PUPR - Public works and human settlements	Provision of Proper Drinking Water	5900,59	Yes	High	Yes	High	Yes	5
Kemenhub - Transportation	Rail Transport Services	3609,18	Yes	High	Yes	High	Yes	5
Kemenhub - Transportation	Rail Transport Connectivity Infrastructure	3442,02	Yes	High	Yes	High	Yes	5
PUPR - Public works and human settlements	Groundwater and Raw Water Network Development	3132,97	Yes	High	Yes	High	Yes	5
ESDM -Energy and Mines	Planning, Development and Supervision of Oil and Gas Infrastructure	1113,41	Yes	High	Yes	High	Yes	5
Kemenhub - Transportation	Rail Transport Safety and Security	970,64	Yes	High	Yes	High	Yes	5
KLHK-Environment & Forestry	Environmental Damage Recovery	238,27	Yes	High	Yes	High	Yes	5
KLHK - Environment & Forestry	Improving Production Forest Management Planning	61,31	Yes	High	Yes	High	Yes	5
PUPR - Public works and human settlements	Flood Control, Lava, Urban Main Drainage Management, and Coastal Protection	9033,22	Yes	High	Yes	High	No	4
PUPR - Public works and human settlements	Operation and Maintenance of Natural Resources Infrastructure and Disaster Management	8051,72	Yes	High	Yes	High	No	4
BNPB - National Board for Disaster Management	Formulation and Implementation of Technical Policy for Emergency Resources Supply	4003,72	Yes	High	Yes	High	No	4

Source: I4CE, based on data provided Indonesia's Fiscal Policy Agency (BKF)

Because precise knowledge of 'hotspots' and of the Indonesian context is needed to fill the reformability table, this process is left for future research. Table 3 presents an example of a reformability table filled for one 'hotspot' identified in the green budget for France; it can serve as inspiration. Moreover, (non-exhaustive) lists of current likely positive social effects, and potential negative social effects associated with several 'hotspots' identified in Indonesia's 2021 CBT are included in Table 4. These social effects are derived from the analysis grid, and from information obtained about the 'hotspots' themselves. They can serve as starting points to fill the reformability table. Reform propositions should attempt to avoid, diminish, or compensate for potential negative social effects of climate measures, and should aim to maximize current or potential social co-benefits, all in order to progress towards both national climate and social objectives.

Table 3: Example of reformability table filled for three climate and social 'hotspots' in France's 2021 green budget

Railway					
Programme 203 - Action 41 **2.564.200.000 EUR**			**Support for the passenger and freight rail sector**		
II; PI; EM; HE; AC IN; UR; JS; GE		**Spatial distribution; accessibility to low-income households: freight competitiveness; network electrification; modal shift**			
Reform proposition	**Climate or social goal(s)?**	**Climate or social side-effect?**	**Public costs and/or benefits?**	**Public acceptability**	**Complementarity with another measure?**
Lowered public rail fares by increasing subsidies	• Increased use of public rail transport as an alternative to private vehicles by Improving its competitiveness	(++) Social benefits, and climate benefits if modal shift	(---) Cost of increasing subsidies	(++) Improved accessibility and availability of rail transport (-) Social cost of behaviour change	» Complementary to the removal of the reduced tax rate on fuel used for public passenger transport
Include a systematic assessment of the spatial distribution of rail infrastructure and supply	• Improved availability of public rail transport, especially in peri-urban areas and in both high- and low-income areas • Increased use of public rail transport as an alternative to private vehicles	(++) Social benefits, and climate benefits if modal shift	(-) Cost of the assessment (--) Current performance criteria based on the number of passengers carried (which decreases with population density)	(++) Improved accessibility and availability of rail transport (-) Social cost of behaviour change	» Complementary to lowered public rail fares to foster modal shift
Integrated subsidies for low carbon freight transport modes (rail, inland waterways)	• Preventing competition between low-carbon modes (rail and inland waterway) • Increased competitiveness compared to road freight transport • Optimisinag the national freight network	(+) Climate benefits if leads to modal shift (yet companies face stranded assets, high invesment needs, and require trainings to adapt to newa practices) (+++) Economic and employment benefits for low- carbon freight companies (+++) Social benefits: reduced air pollution and congestion	(--) Investment plan for rail and waterway infrastructure required (--) Cost of subsidies	(++) Support to the energy transition (-) Social cost to companies associated to changing practices (and high risk of opposition if change imposed)	» Complementary to the removal of the reduced tax rate on fuel used for road freight transport

co benefits/favourable ambiguous/potential barriers adverse side effects/unfavourable

Source: I4CE

Table 4: Climate and social 'hotspots' in Indonesia's 2021 Climate Budget Tagging: potential social co-benefits and adverse side-effects

Groundwater and Raw Water Network Development	(1) Health benefits; (2) Improved living conditions; (3) Increased access to economic and education opportunities; (4) Can reduce inequality if targets deprived neighbourhoods; (5) Protects the livelihood of rural economies (agriculture, fisheries); (6) Increases food securit; (7) Poverty reduction	(1) Can increase inequality if investments only towards wealthier areas (or regions); (2) Can increasing regional inequalities; (3) Risks of benefits being captured by private sector.
Planning, Development and Supervision of Oil and Gas Infrastructure	(1) Reduced energy prices; (2) Can benefit poorer households; (3) Employment impacts in fossil-fuel sector	(1) Negative health impacts if generates pollution; (2) Regressive distributional effect; (3) Employment impacts in renewable energy sector
Rail Transport Safety and Security	(1) Health benefits (if leads to transport modal shift); (2) Poverty reduction (if address needs of poored) end improved access to economic opportunities; (3) Enhances access to basics services; (4) Facilitates relocations to safe places in case of climate disasters, climate change if good services accessibility; (5) Job creation	(1) Can increase inequality if investments only towards wealthier areas (or regions); (2) Can increasing regional inequalities; (3) Risks of benefits being captured by private sector.
Environmental Damage Recovery	(1) Health benefits; (2) Mental health & well-being; (3) More benefits for low-income households living in area with poorer air quality; (4) Protects income; (5) Improved living conditions; (6) Increases education, job creation with training of employees; (7) Regional/local development	(1) Can increase inequality if investments only towards wealthier areas (or regions); (2) Can increasing regional inequalities; (3) Risks of benefits being captured by private sector.
Improving Production Forest Management Planning	(1) Health benefits and well-being; (2) Mental health & well-being; (3) Income generation for communities; (4) Income protection; (5) Reduced poverty; (6) Livelihood protection for forest communities; (7) Job creation; (8) if targeted, job opportunities for women, female empowerment	(1) Increased competition with agriculture and urbanisation; (2) Impacts on food security, housing, development; (3) Regressive if financial benefits not shared with local populations; (4) If no ownership rights, potential displacements, loss of livelihood; (5) If centralised (and not local) governance, can increase forest loss and reduce benefits for

Source: I4CE, 2023

04
Using Fiscal Incidence Analysis for Green and Social Policy reform in Indonesia

4.1 Fiscal Incidence Analysis of SCBT 'hotspots'

Fiscal incidence analysis (FIA) of the SCBT-identified `hotspots' will help policymakers estimate how the policies in the CBT affect welfare, poverty and inequality, employment, health, and access to basic needs and services. It provides additional information to policymakers on how to best design policies to maximize or minimize their individual- and group-level positive or negative (respectively) impacts. For example, if carbon taxes are introduced into the CBT, incidence analysis can be used to identify individuals more at risk of negative impacts (reductions in working hours and labor-market productivity; reductions in purchasing power from a carbon-intensive consumption basket) as well as point out which social transfers might be best placed to mitigate some of the losses experienced by those populations. In addition, it identifies the direct linkage between climate and social "hotspots" and household or group-level income and welfare losses.

The FIA exercise uses Indonesian microdata to identify the individuals, groups, and communities most likely to benefit from 'hotspot' policies rather than providing an estimate of the magnitude of those benefits. Impact estimates were not possible due to data limitations: during the SCBT exercise, detailed information describing the fiscal rules of the 12 `hotspots' was not available. Likewise, fiscal magnitudes for the regions and subregions in which these `hotspot' policies were being executed was unavailable. As a result, the FIA exercise presented here is provisional: it uses national-level Indonesian microdatasets (the Susenas and PODES) to identify the individuals, groups, and communities which would most likely benefit from 'hotspots' policies. The exercise also places those individuals and communities in the national context; that is, it shows whether individuals most likely to benefit are drawn primarily from the poorer segments of the population or live in areas that are more or less unequal than the national average.

**The FIA goal is to understand how the CBT policies, particularly `hotspots' positively or negatively affect individuals and households** as well as local and national measures of poverty, inequality, and access to services. Table 5 categorizes each of the 12 `hotspots' into four broad thematic areas. Each area does not contain adaptation or mitigation policies exclusively except as a matter of coincidence.

Table 5: Climate and social 'hotspots' grouped by theme

THEME	INCLUDE ACTIVITIES
INFRASTRUCTURE	1 Connectivity Infrastructure Program 15 Access to liveables Homes
SECURING POTABLE WATER	2 Provision of driking water 5 Groundwater, Raw Water Network Development
POST-DAMAGE RECOVERY	8 Enviroment Damage Recovery 13 Operation and maintenance of Natural Resources Infrastructure and Disasater Management 14 Formulation and Implementation of Technical Policy for Emergency Resources Support
DAMAGE MITIGATION	9 Improving Production Forestry Management and Planning 10 Development of Dams, Lakes, and other Water Recovery Structures 11 Development of Surfaces, Swamp and Non-rice irrigations networks 12 Flood control, lava, Urban Drainage Management, and Coastal Protection

Identifying thematic areas from table 5, the FIA explores village-level infrastructure access and various environmental indicators in PODES 2021 under each thematic area and presents results identifying vulnerable households (represented in the 2021 Susenas survey) at the district-level. The FIA also reveals results for inequality in access to infrastructure and environmental vulnerability at the district and village level and within and between areas at high/low risk of negative economic impact from climate change.

The FIA analysis reveals a positive correlation between income levels and current environmental and climate change adaptation and mitigation practices and characteristics. Provisional FIA findings reveal that there are large disparities correlated with income levels in (a) infrastructure connectivity, (b) access to drinking water, (c) water usage, (d) waste disposal, (e) exposure to forest resource degradation, and (f) waste management practices. Furthermore, robust environmental damage recovery systems such as recycling and plantation efforts are often lacking, exacerbating the challenges faced by poor districts. Weak natural disaster mitigation and emergency response systems further hinder the resilience of these vulnerable areas.

The FIA analysis indicates the regions and communities where `hotspot' policies would likely have the largest positive climate and social impacts. Analysis of the PODES and Susenas microdata together with the CEQ Assessment FIA income concepts dataset reveals that climate vulnerable groups exhibit distinct characteristics that set them apart from less vulnerable groups in Indonesia. They tend to inhabit sloped terrains, relying significantly on forest cover. They face heightened exposure to air and water pollution. Cooking with firewood is prevalent, and they often dispose of wastewater in open ground areas. Additionally, burning agricultural waste is a common practice. However, it is worth noting that solar energy usage is more prevalent in impoverished rural districts. These empirical facts combined with Indonesia's elevated exposure to climate change disasters such as flooding indicate that the government should place hotspot investments strategically in those areas most likely to be left behind when the next climate disaster hits.

4.2 Data and Methods

We use Potensi Desa (PODES) 2021 and Survei Sosial Ekonomi Nasional (SUSENAS) 2021 surveys to match village and district level socioeconomic and infrastructure access characteristics, especially for access to health and education facilities. PODES[13] provides rich information on various infrastructure and environmental aspects at the village-level across the country while SUSENAS is the national socioeconomic survey conducted by Badan Pusat Statistik (BPS) Indonesia. The Commitment to Equity (CEQ) dataset is then built using the SUSENAS and includes the national-level distribution of pre-fiscal, disposable, and post-fiscal income(s) at the household-level calculated using the CEQ Assessment FIA framework (and also based on the SUSENAS survey). We then merge the household-level statistics developed in the CEQ dataset with the village-level indicators in PODES.[14]

We explore differences in access and environmental vulnerabilities along the urban vs rural and "poor" vs. "non-poor" districts where "poor" is defined as a district with a poverty headcount ratio of 20 percent or greater (at CEQ post-fiscal income and using the national poverty line).[15] We use the CEQ income concepts generated using SUSENAS to merge variables used to generate the various income concepts with the infrastructure indicators observable in PODES. Our final merged dataset is nationally representative and consists of 34 provinces and 252,285 households. We then use our merged dataset to calculate descriptive statistics and run cross-tabulations between CEQ income concepts and infrastructure or environmental variables.

4.3 Results

Indonesia has high levels of income inequality and significant variations in income levels within provinces (Figure 11). The provinces of Yogyakarta, Banten, Bali, and the two Papuan provinces (Papua Barat and Papua) exhibit the highest prefiscal income[16] inequality as measured by the Gini coefficient. Meanwhile, inequality at CEQ Final Income[17] is markedly higher than prefiscal income inequality in the provinces of Aceh, Nusa Tenggara Timur, and Kalimantan Utara. The five provinces with relatively higher prefiscal income inequality also exhibit relatively higher inequality at CEQ Final Income.[18]

[13] PODES (Potensi Desa) provides is a village-level census of facilities and socioeconomic characteristics, collected by the Ministry of Villages, Development of Disadvantaged Regions, and Transmigration. PODES contains information about the socioeconomic characteristics of Indonesian villages, such as demographics, education, health, and economic activity. It also includes information about village infrastructure, such as roads, bridges, and irrigation systems. SUSENAS (Survei Sosial Ekonomi Nasional) is a national socioeconomic survey conducted by the Badan Pusat Statistik (BPS) of Indonesia. The main objective of SUSENAS is to collect data on household income, consumption patterns, and other socioeconomic indicators in Indonesia. The survey collects data on a wide range of topics, including household demographics, education, health, labor force participation, and housing conditions.

[14] Using PODES, we aggregate up from village level to district level since SUSENAS is representative at the district x urban-rural level only. This means we assign a singular mean household-level income per district to multiple villages within the district x urban-rural area, which creates an analytical oversimplification since we know that income varies within the district and within the village along with access to infrastructure and vulnerability to environmental indicators. Since income and various other socioeconomic and fiscal system variables are measured at the district level in SUSENAS, we assign these to the district-level infrastructure variables in PODES. Thus, we lose the village-level variation in socioeconomic characteristics. As a robustness check, we measure income variation within a district.

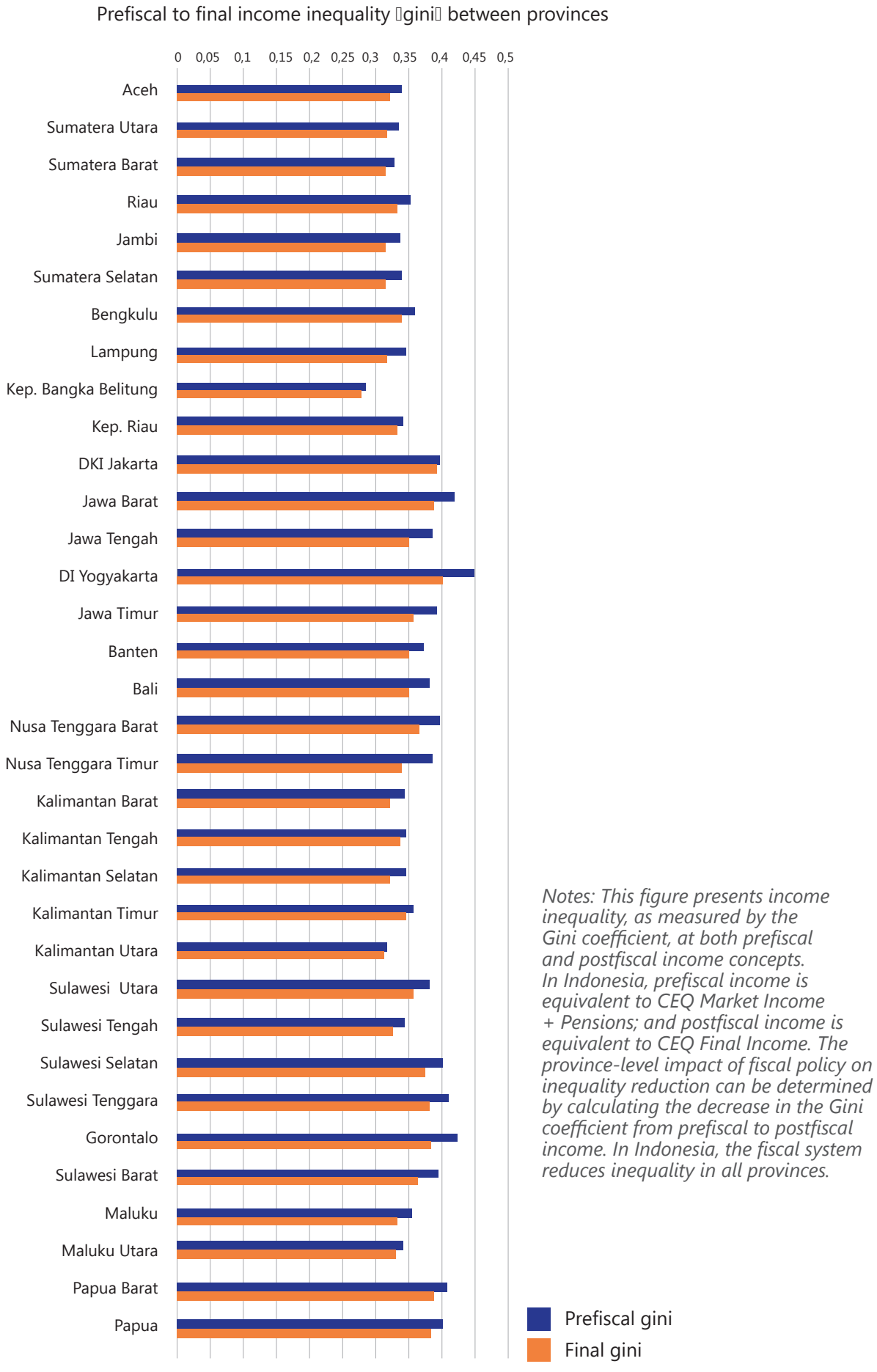
[15] CEQ Postfiscal income, also known as CEQ Consumable Income, is created by subtracting any indirect taxes paid from CEQ Disposable Income and adding any indirect subsidy benefits received to CEQ Disposable income.

[16] Also known as "Market Income" or "Market Income + Pensions" in CEQ Assessment terminology. In Indonesia, prefiscal income is defined as Market Income + Pensions due to the treatment of contributions to and income received from the public contributory pension system as deferred income; see the Commitment to Equity Handbook (Lustig, 2023) for more details.

[17] Final Income, Consumable Income and Disposable Income are all postfiscal income measures. Final Income is equal to Consumable Income plus the government-cost value of in-kind health and education services received/accessed.

[18] Inequality within provinces is substantially lower national-level inequality in Indonesia; official Gini coefficient estimates (over the official welfare aggregate) range between 0.388 and 0.379 over the years 2017 to 2022 – indicating that the bulk of income inequality in Indonesia is between provinces rather than within provinces.

Figure 11: Income inequality, in and between Indonesia's provinces



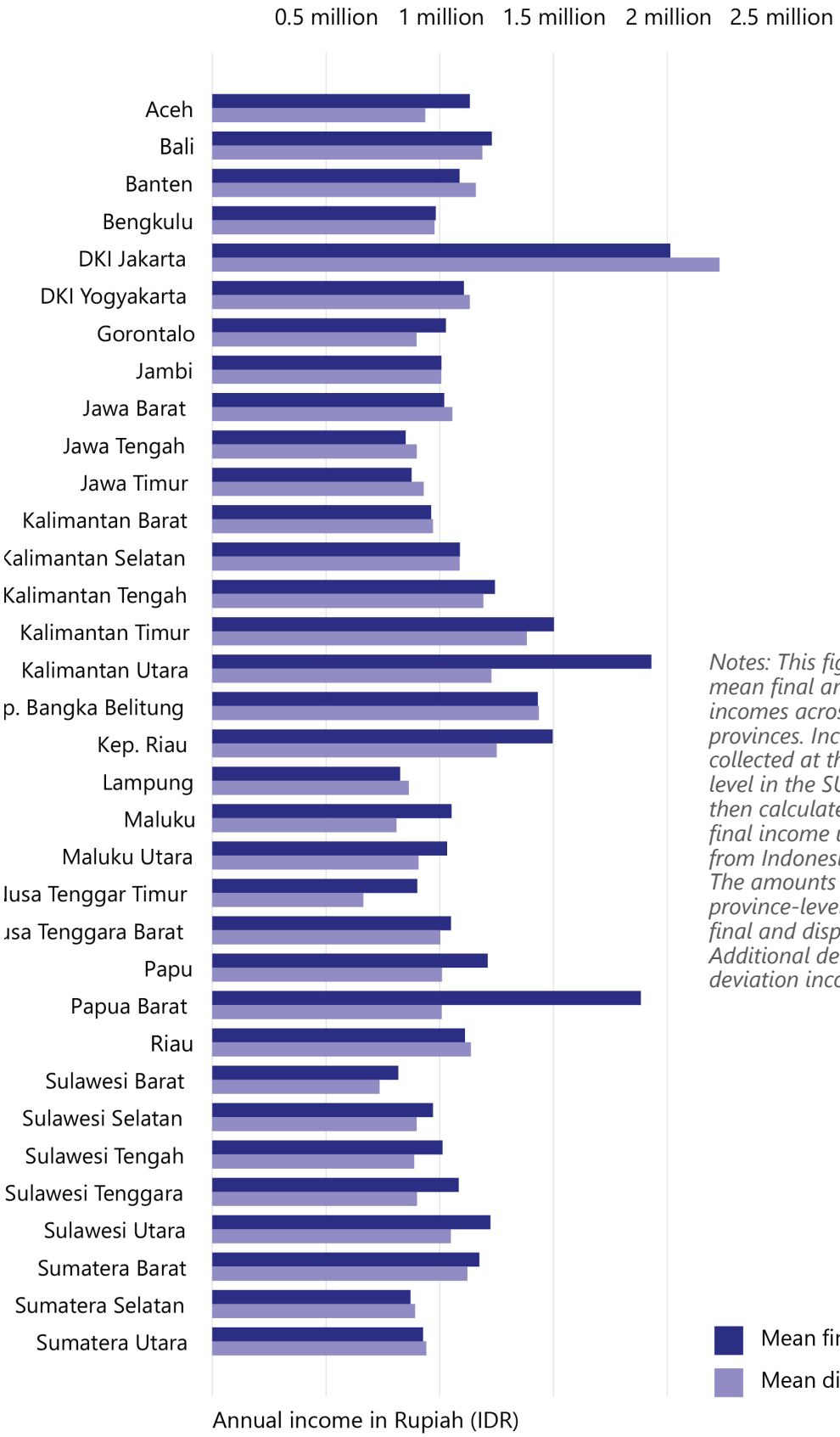
Notes: This figure presents income inequality, as measured by the Gini coefficient, at both prefiscal and postfiscal income concepts. In Indonesia, prefiscal income is equivalent to CEQ Market Income + Pensions; and postfiscal income is equivalent to CEQ Final Income. The province-level impact of fiscal policy on inequality reduction can be determined by calculating the decrease in the Gini coefficient from prefiscal to postfiscal income. In Indonesia, the fiscal system reduces inequality in all provinces.

Figure 11 suggests that post-fiscal inequality in almost all provinces seems slightly lower than prefiscal, meaning that fiscal policy is slightly equalizing in Indonesia. The marginal impact of the fiscal system on income across the country is approximately average for all Indonesian provinces. As inequality at postfiscal or final income is always less than inequality at prefiscal income, we can say that the fiscal system itself is responsible for a reduction in income inequality. We use "final income gini" here as it captures final incidence of income at the household-level more accurately by taking into account indirect subsidies, in-kind transfers and indirect taxes. In addition, our calculations of "consumable income gini" suggests a similar trend in magnitude and direction.

The fiscal system provides larger net positive transfers (on average) to the poorest districts. Figure 12 summarizes CEQ Disposable Income and CEQ Final Incomes (per capita) for all 34 provinces. CEQ Disposable Income is equivalent to the official welfare aggregate used to estimate official poverty headcount ratios and other social welfare statistics and indicators while CEQ Final Income adds the value of indirect subsidies and in-kind transfers received and subtracts the value of indirect taxes paid to CEQ Disposable Income. The provinces of DKI Jakarta, Kepulauan Bangka Belitung, Kepulauan Riau, DKI Yogyakarta and Kalimantan Utara have the highest mean CEQ Disposable Income while Jawa Barat, Sumatera Utara, Aceh, Jawa Timur and Jawa Tengah have the lowest. Meanwhile, the provinces of Aceh, Sumatera Utara, Jawa Timur, Jawa Tengah, Nusa Tenggara Timur, Papua Barat, and Papua have the highest share of districts with mean headcount poverty ratios of 20 percent or more.[19] Figure 13 demonstrates that the fiscal system does provide larger net positive transfers to the poorest districts, where the poorest districts are here defined as any district with a headcount poverty ratio of 20 percent or more.

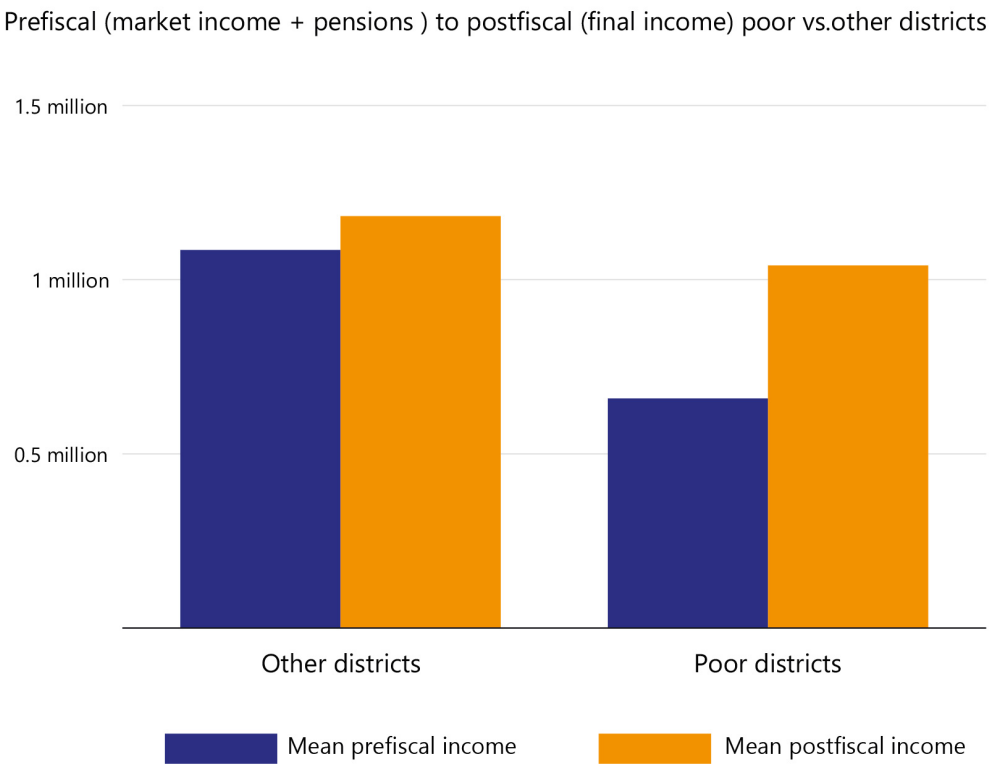
[19] For reference, the national poverty headcount ratio at the national poverty line estimated over the official welfare aggregate ranged between 10.6 and 9.4 percent in the years from 2017 to 2022.

Figure 12: Distribution of income across provinces



Notes: This figure represents mean final and disposable incomes across Indonesian provinces. Income data is collected at the household-level in the SUSENAS, the CEQ then calculates disposable and final income using information from Indonesia fiscal system. The amounts shown represent province-level mean household final and disposable income. Additional details on standard deviation income in Appendix 2.

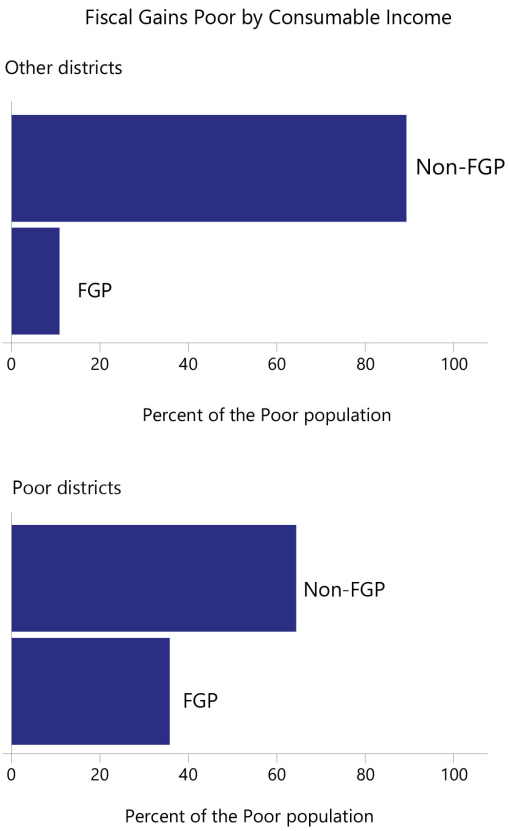
Figure 13: Prefiscal and postfiscal income for the poorest districts



Notes: Graph presents the mean market income vs. final income for the poorest districts vs, other districts. "Poor" districts represent districts with 20% or higher headcount poverty. Income data is collected at the household-level in the SUSENAS , the CEQ then calculates disposable and final income using information from Indonesia fiscal system. The amounts shown represent district-level mean final and disposable household income.

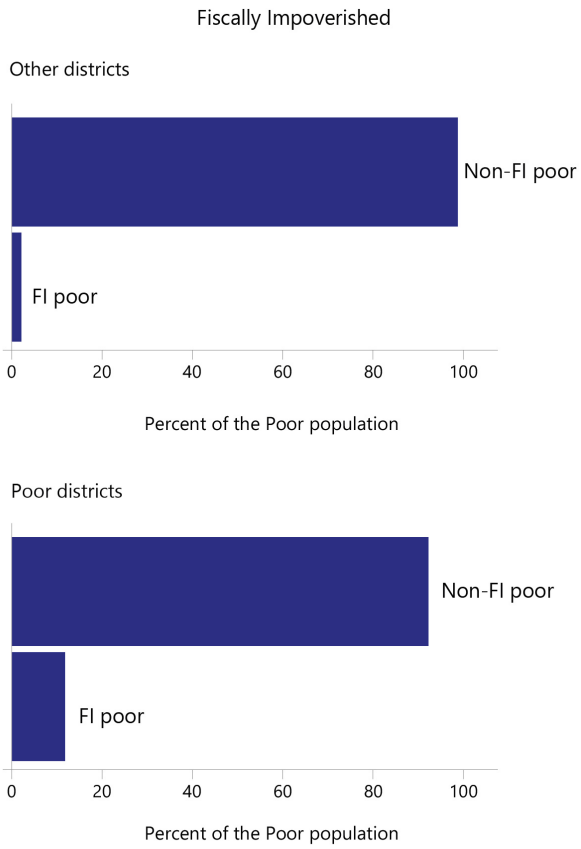
The Indonesian fiscal system provides net positive fiscal transfers to many poor households. "Fiscal impoverishment" refers to poor individuals or households who end up paying more into the fiscal system via direct and indirect taxes than they receive from the fiscal system in direct cash (or near-cash) transfers and subsidy benefits. Fiscal Impovershiment is estimated by comparing the level of prefiscal and postfiscal income (in this case CEQ Market Income + Pensions and CEQ Consumable Income, respectively) for all those identified as poor at postfiscal Income. When postfiscal (CEQ Consumable Income) is less than prefiscal income (Market Income + Pensions) for these poor individuals, we designate them as "fiscally impoverished" because the net addition of taxes and transfers to prefiscal income left these poor individuals with lower income levels in cash terms. "Fiscal Gains to the Poor", meanwhile, is estimated as the difference between prefiscal and postfiscal income for those individuals identified as poor at prefiscal income. When Consumable Income is greater than Market Income for these poor individuals, we designate them as having experienced fiscal gains from the net addition of taxes and transfers to prefiscal income. In other words, after taking into account the effects of taxes, subsidies, and transfers, some poor individuals and households may have been made worse off and some better off in cash terms. The former are those who are fiscally impoverished and the latter are those who experienced "Fiscal gains poor to the poor". Figure 14 demonstrates that while there are very few individuals who are left *fiscally impoverished*, there are many more poor individuals who experience *net fiscal gains* from prefiscal to postfiscal income.

Figure 14a: Fiscal Gains for the Poor in poor vs. other districts:



Notes: FI and FGP between the poorest districts and other districts. "Poor" districts represent districts with 20% or higher headcount poverty. "Poor" districts represent districts with 20% or higher headcount poverty.

Figure 14b: Fiscal Incidence overall



More than four-fifths of villages indicate that residents rely on agriculture, forestry and fishing for incomes and livelihoods. In terms of common commodities produced; 25% produce palm oil, 24% produce rubber, 15% produce rice and 12.5% produce coffee (see figure 15). This fact is relevant when we analyze village- and individual-level characteristics that are linked to the likely social impact of the 'hotspot' policies below.

4.3.1 Themes: Infrastructure Provision, Infrastructure Access, and Potable Water

Infrastructure access in Indonesia is unevenly distributed with rural and low-income households facing particularly longer travel times and difficulty accessing nearby hospitals, clinics, and schools. We observe a significant difference in distance to pre-primary-, secondary-, and tertiary-level schooling between urban and rural areas. While distance to the nearest preschool in rural areas is almost double that of urban areas, distance to primary education centers shows no significant difference. For rural areas, it takes almost twice as long to travel to the closest clinic or hospital. Almost 50 percent of rural residents face travel distances to the closest clinic or hospital of 30 kilometers or more.

Figure 15a: What is the main income source for village residents in your area?

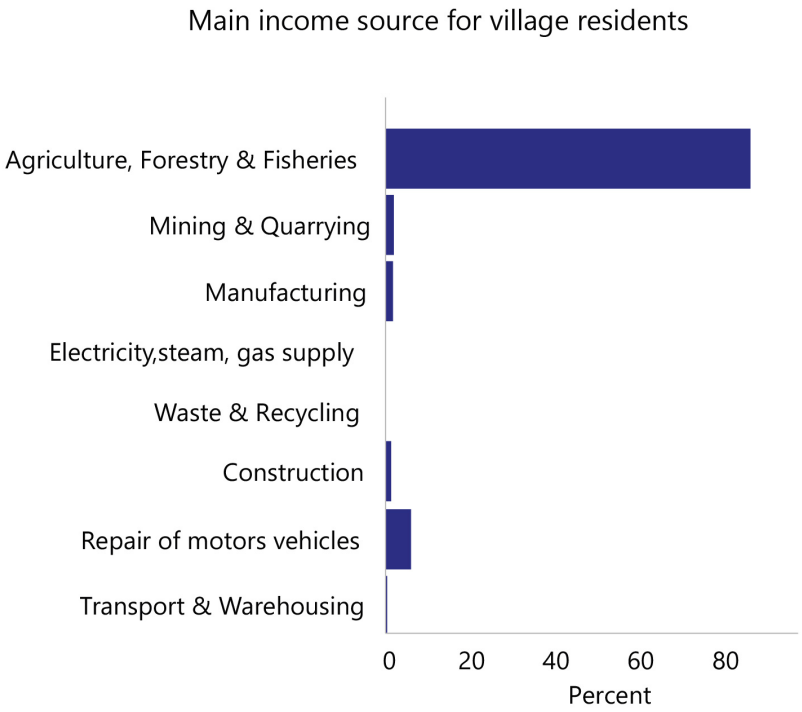


Figure 15b: What is the topography in your region?

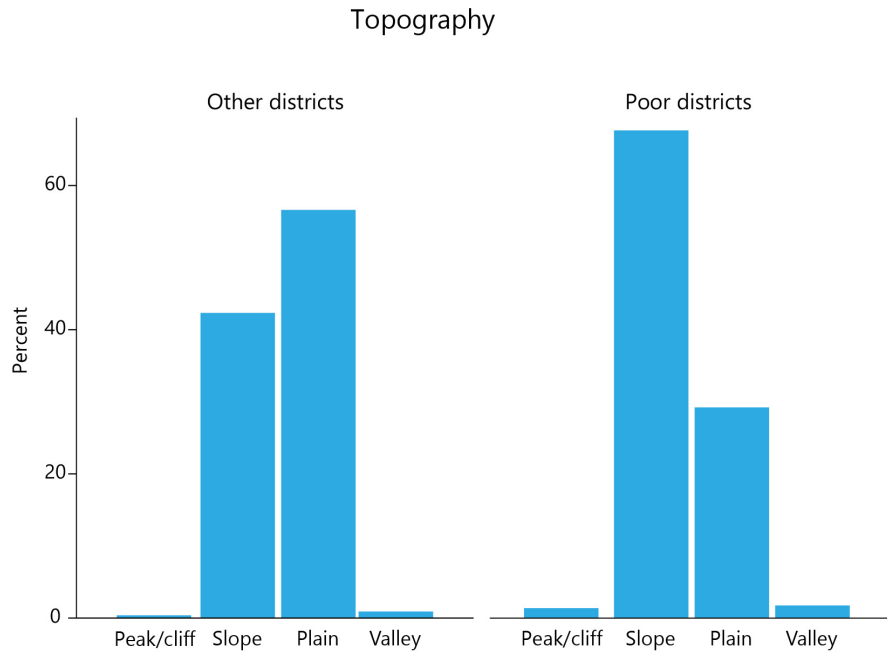
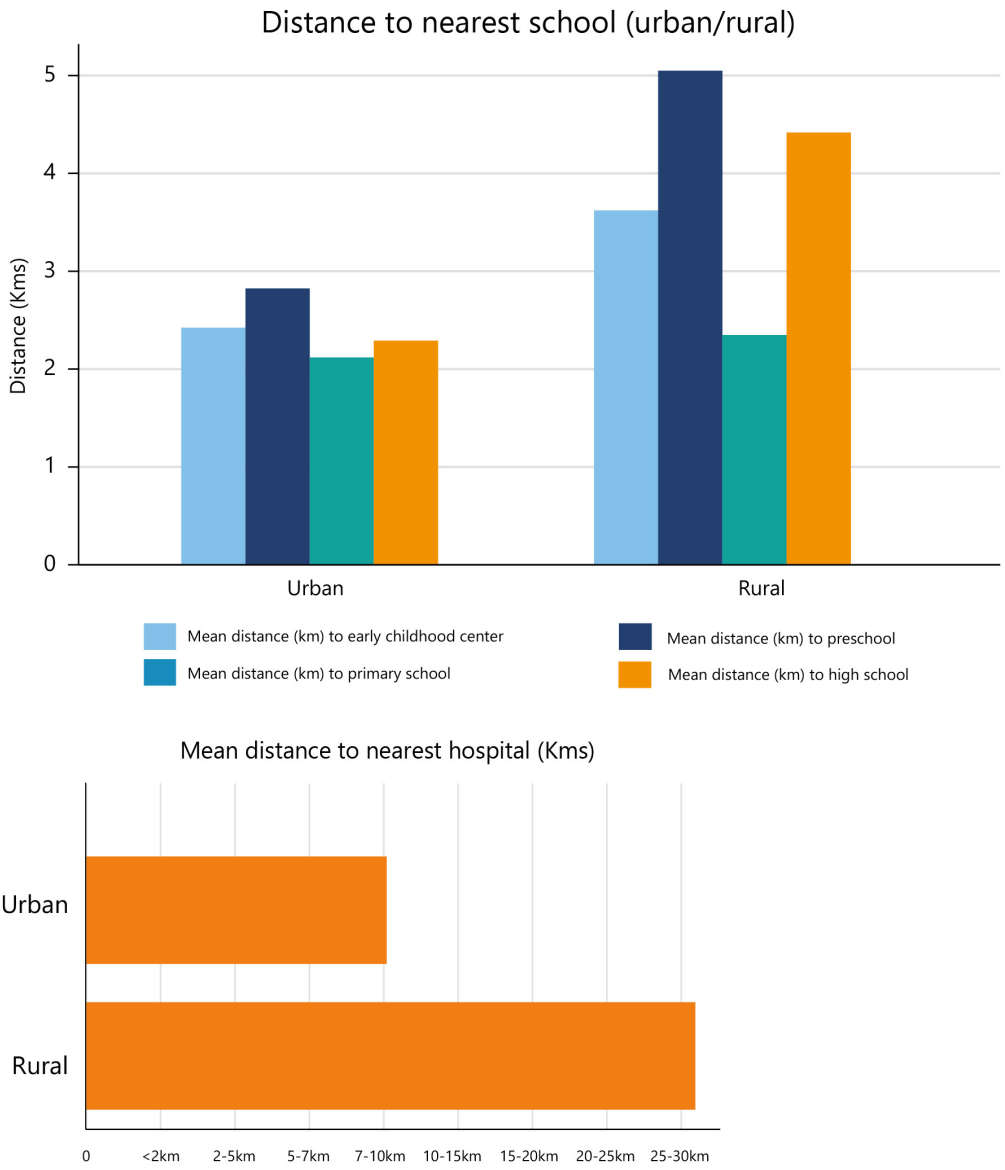


Figure 16: Distance to nearest school (left) or hospital (right)



Public transport options are significantly more limited in poorer districts, making essential service access more difficult. Public transport has better availability in non-poor urban districts while availability in rural districts is limited. In poor districts, almost 30 percent of households have no access to public transport while almost 50 percent of the roads are made from gravel, stone or soil; in over 80 percent of non-poor districts roads are concrete or tarmac. Almost 70 percent of the roads available from agricultural centers to main roads are made from gravel, stone or earth. Moreover, the main road in rural villages is only fully accessible during approximately half of the months in a calendar year.

Figure 17a: Is public transport available to get to the nearest hospital?

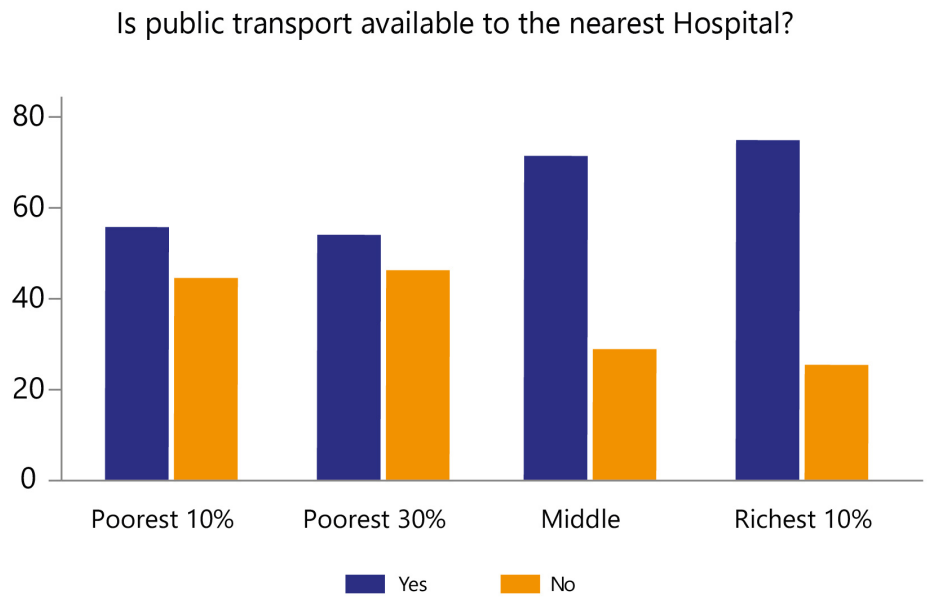


Figure 17b: How easy is it to reach the nearest high school?

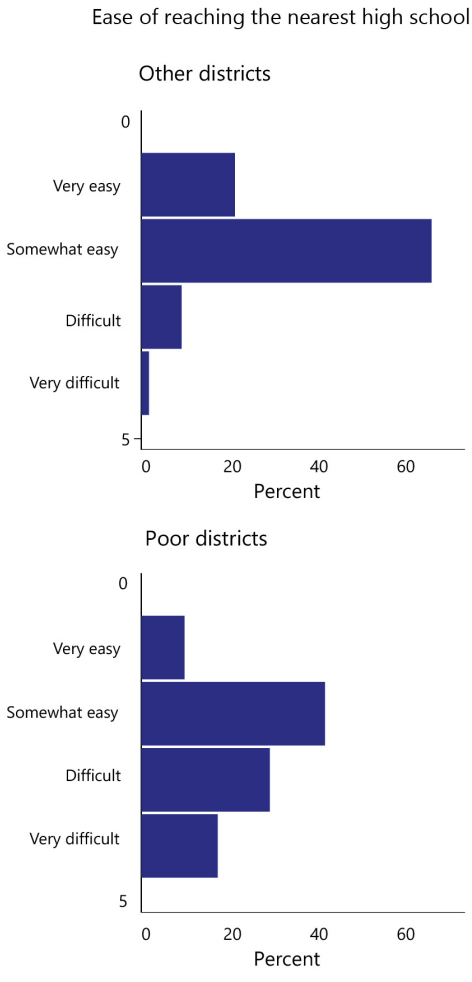


Figure 17c: Is public transport available close to where you live?

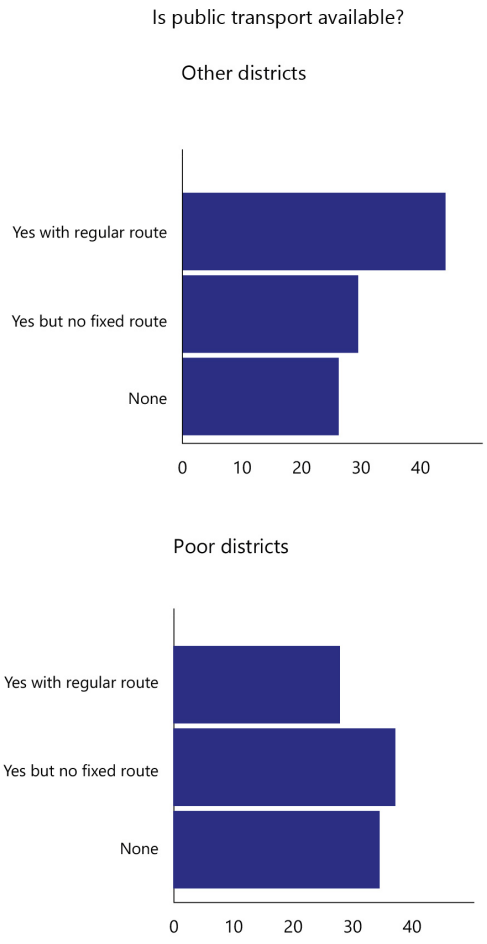
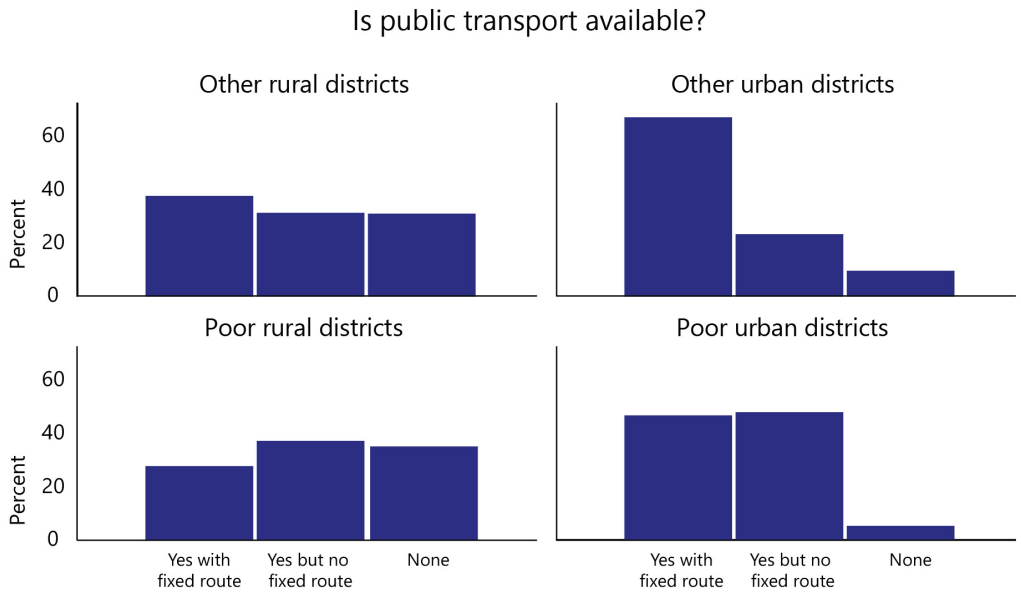
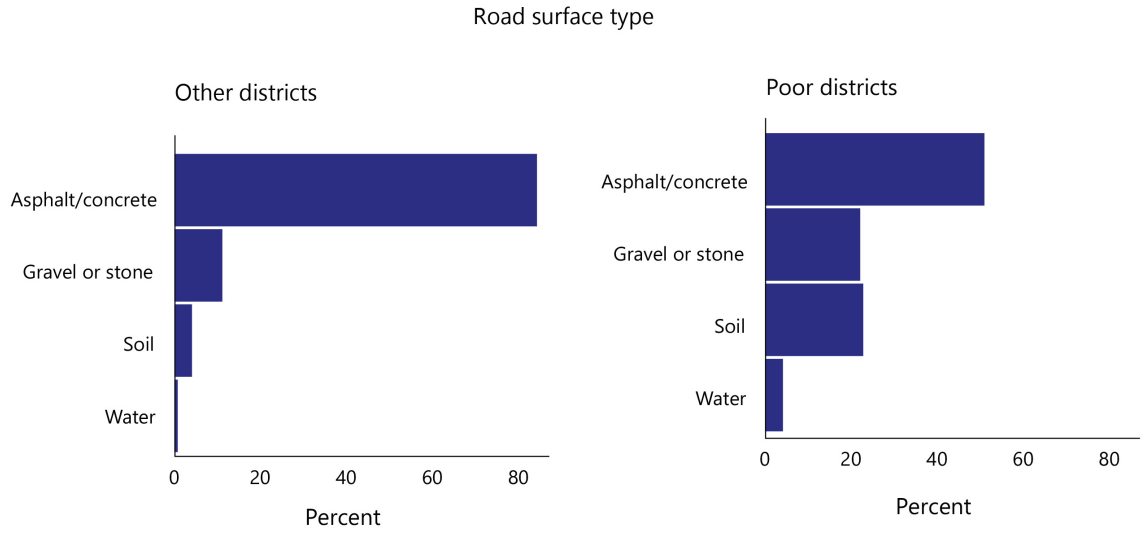


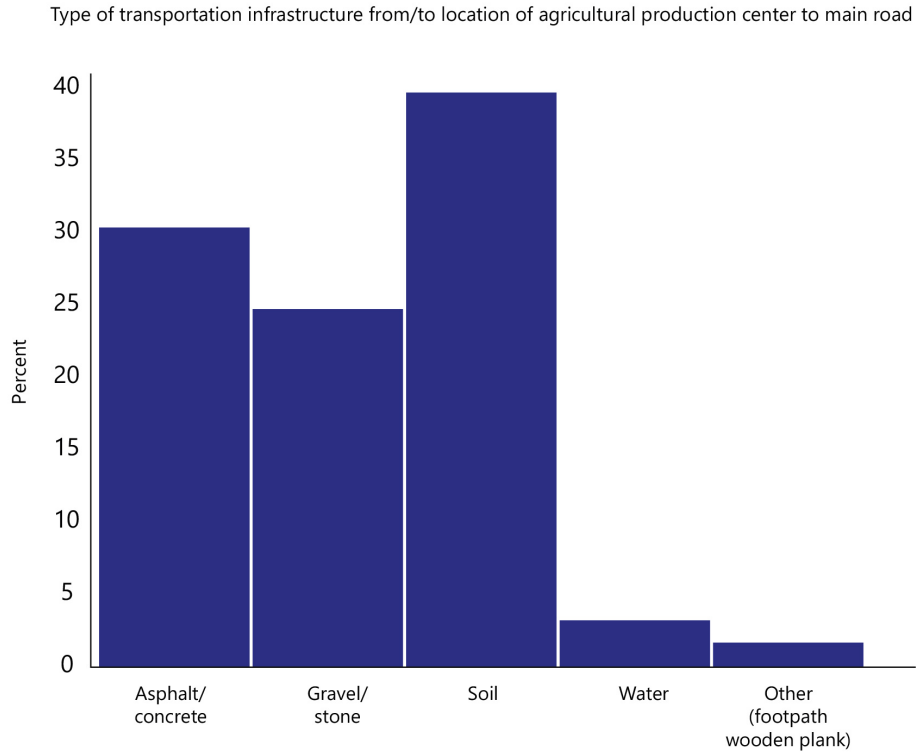
Figure 17d: Same as 17c, disaggregated by urban/rural and poor/non-poor districts



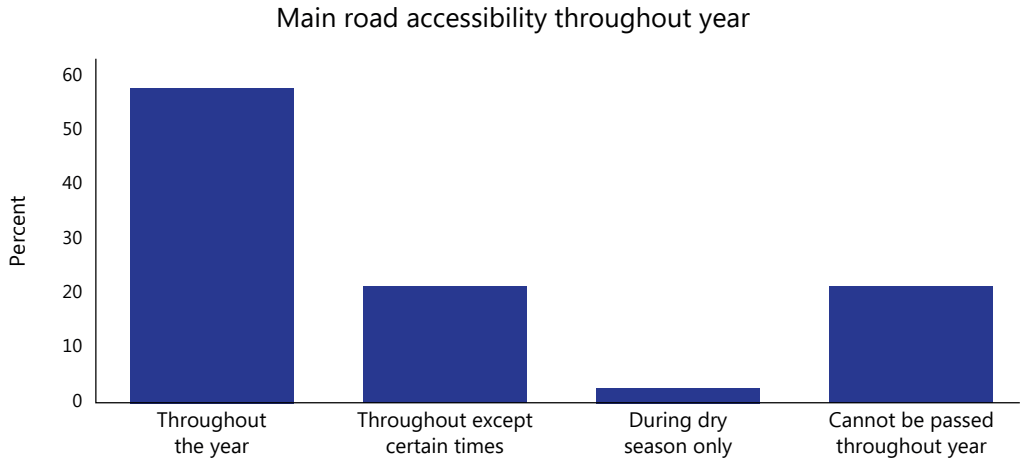
Notes: Figure shows the correlation between poverty and ease of access to transportation. "Poor" districts represent districts with 20% or higher headcount poverty. In 17a, poorest 10%, 30% represent the lowest income 10%, 30% by consumable income.

Figure 18: Road surface for the main road (a) and for connections with agricultural production centers (a); accessibility of main road throughout the year (c)



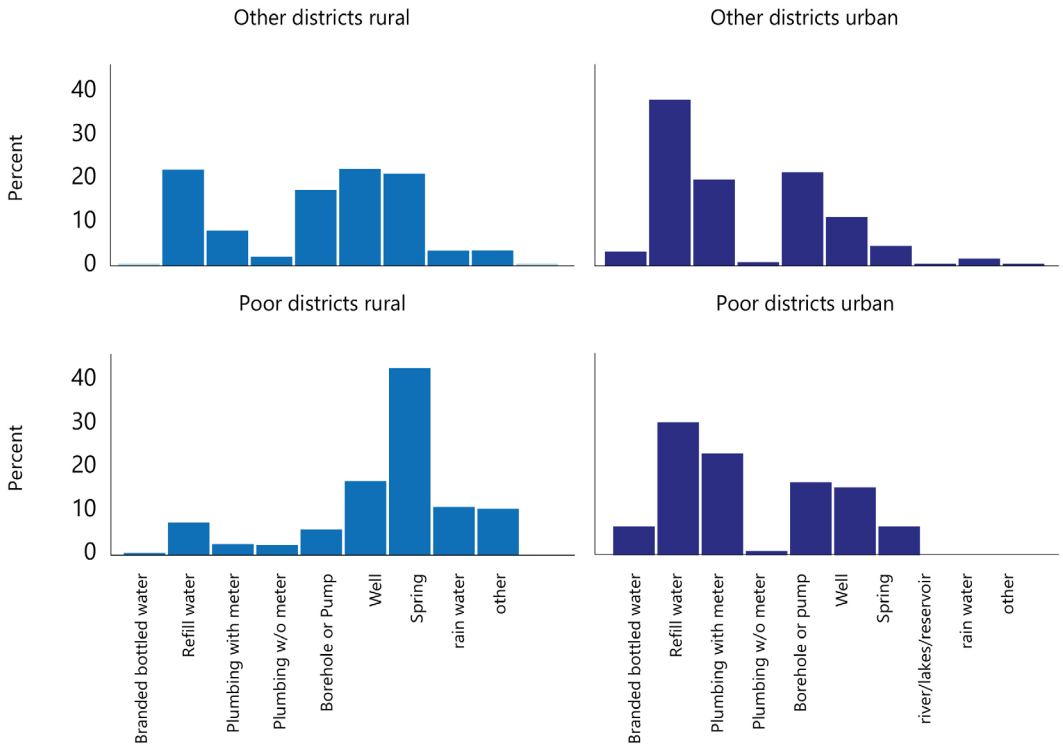


Notes: Figure shows road surface and accessibility. Poor districts are more likely use gravel and soil roads as compared to asphalt/concrete roads. "Poor" districts represent districts with 20% or higher headcount poverty.

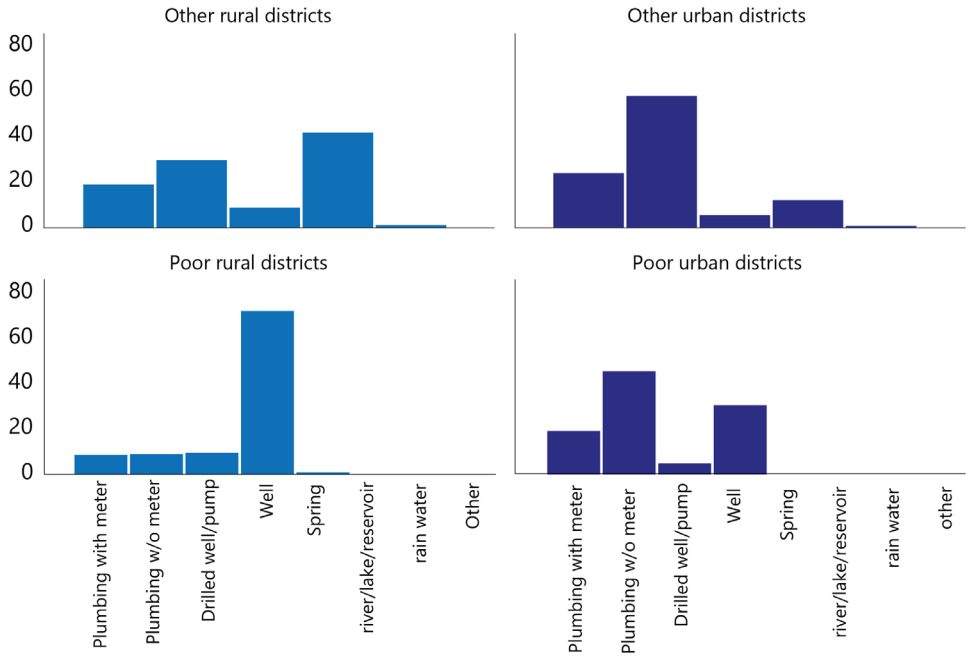


Poorer households are much more likely to use unimproved water sources for drinking, cooking, cleaning, and drainage than are richer households. Low-income households mostly depend on wells as a source of water for drinking bathing and laundry whereas richer households use water sources connected to piped water networks or wells and pumps. Most poor districts use open ground for water drainage whereas most non-poor districts use drainage and gutter systems for the same. Unprotected and unimproved potable water sources and drainage systems may be more susceptible to groundwater contamination from flooding, earthquakes, and other natural disasters which are likely to be more frequent in the future.

Figure 19: Water sources for drinking (a), bath and laundry (b), and drainage (c)

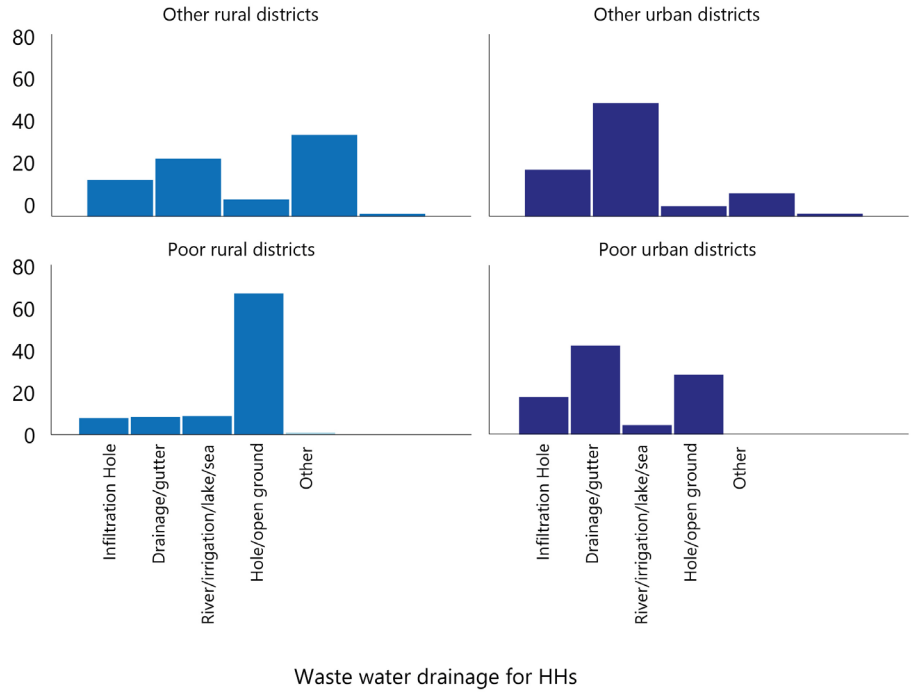


Source of Drinking Water



Source of water for bath, laundry etc.

Figure 20: Waste water drainage



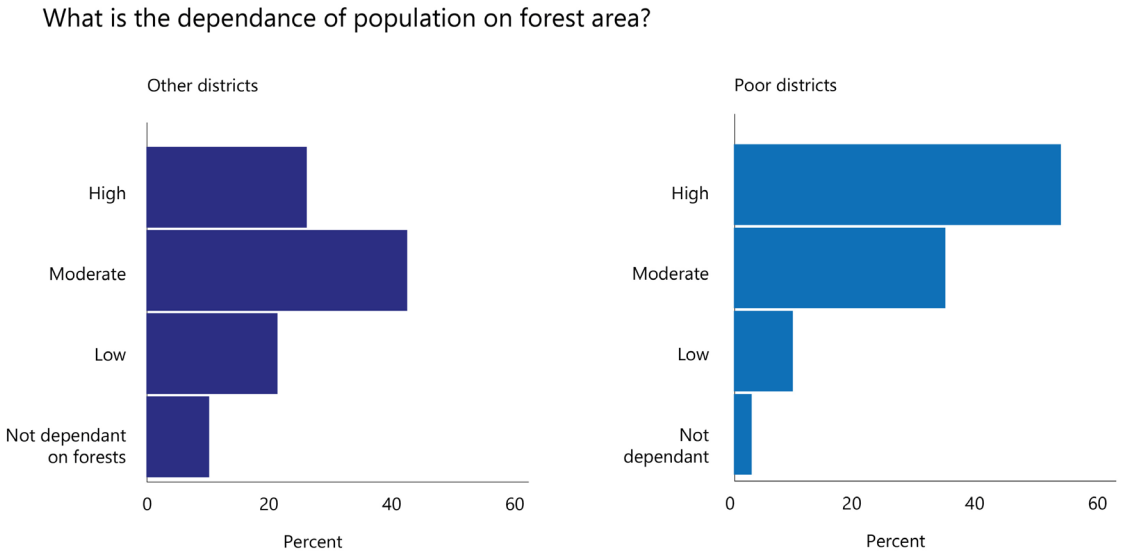
Notes: Figure presents sources of waste water drainage for households in Indonesia. "Poor" districts represent districts with 20% or higher headcount poverty.

Infrastructure connectivity and infrastructure for service provision should focus on areas where marginal productivity gains will be highest. Infrastructure connectivity is weaker in poorer districts. This drives up the cost of accessing essential public services like health and education today and also limits the opportunities individuals and households in these areas have to take advantage of more productive labor market opportunities in the future. Infrastructure for essential service provision is also less frequently available in poorer districts. Climate-related damage to, or elimination of, infrastructure assets, will therefore also create greater burdens, and a greater chance of being left behind, in those same poor districts. Investing in infrastructure connectivity or infrastructure for service provision can support adaptation in the face of climate change, but these investments should be sufficient to help the least well-served by public infrastructure build back better first.

4.3.2 Themes: Damage Mitigation and Post-damage Recovery

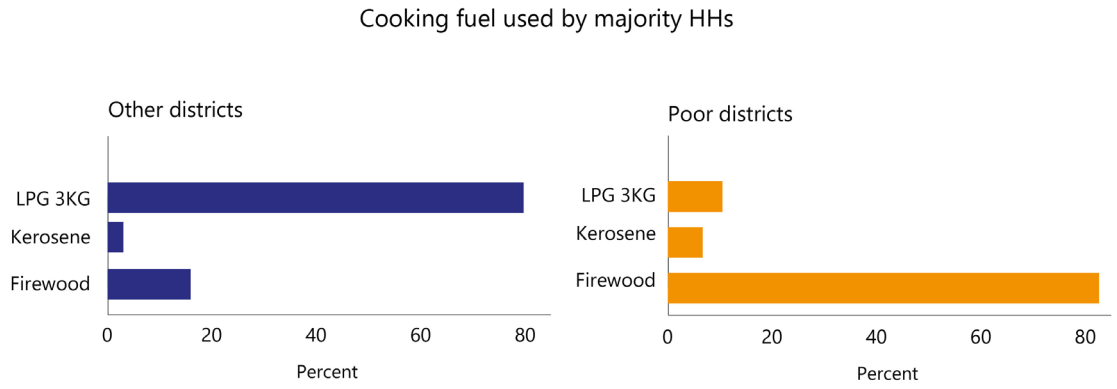
Households in poorer districts overwhelmingly depend on local natural resources and environmental assets for their livelihoods. Between 90 and 100 percent of households in poor districts have "high to moderate" dependency on forest cover while a vast majority of households in poor districts rely on firewood for cooking fuel (Figure 21 and 22). Nearly all rural villagers rely on agriculture, forestry and fishing for their source of income (Figure 23) and important commodities produced are palm oil, rubber, rice and coffee. If and when climate-related weather and environmental events degrade these asset bases, households in these districts will be first to feel the impacts. It is critical that these communities also be targeted to receive expenditures, interventions, or support via the SCBT `hotspot' policies in the "Damage Mitigation" theme.

Figure 21: Is your household dependent on forest cover to fulfill your household needs?



Notes: Responses to the question "is your local area dependent on forest cover for household needs?". Graph shows that poor districts are more dependent on forest cover as compared to non-poor districts. "Poor" districts represent districts with 20% or higher headcount poverty.

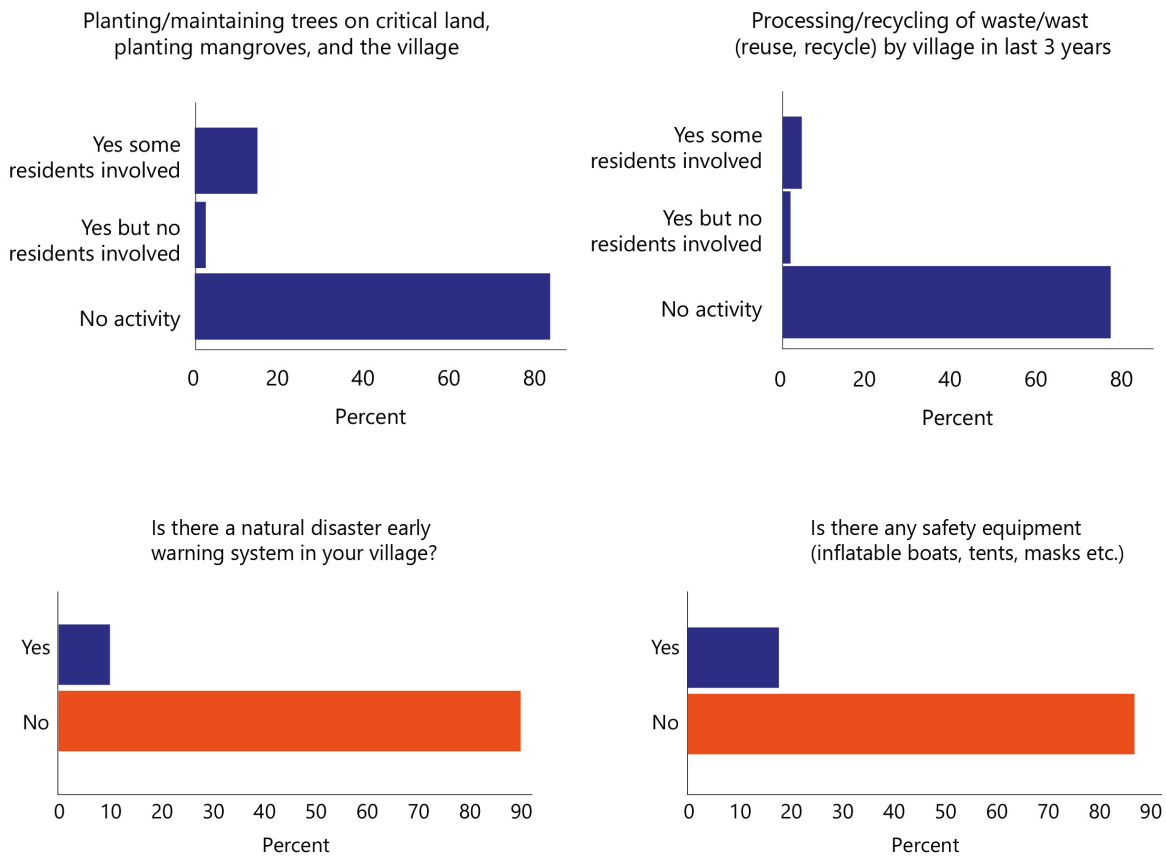
Figure 22: What is the main cooking fuel used in your household?



Notes: Figure shows the main source of cooking fuel used by residents in the poorest provinces. There is a heavy reliance on firewood – 80% of the households in the poorest provinces use firewood as their main source of cooking fuel. "Poorest" provinces represent provinces with 20% or higher headcount poverty.

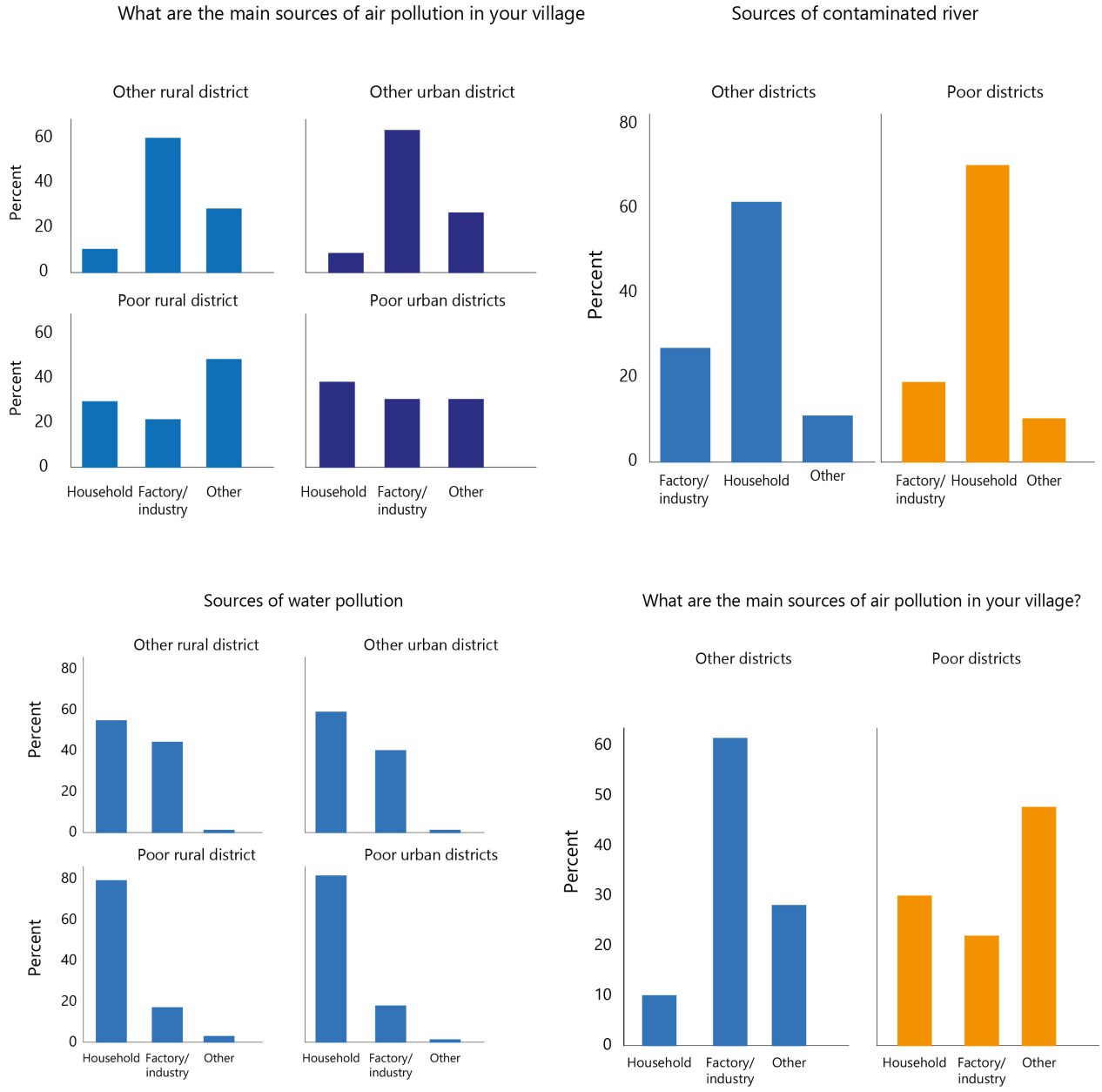
At the same time, most communities in Indonesia have little experience developing locally-relevant environmental asset management plans. There have been no major recycling or planting/maintaining trees or other greenery activities in the past three years in approximately 80 to 90 percent of the villages and urban counties. There are no natural disaster early warning systems or safety equipment in majority of the villages.

Figure 23: Environmental conservation activities in last 3 years (a), existence of natural disaster warning systems or safety equipment (b)



Households in poorer districts with fewer locally-developed strategies for natural resource infrastructure management will need more support in developing climate adaptation strategies. Households themselves in poor districts create more of the ambient air and water pollution than in richer districts while poor districts are four times as likely to burn agricultural waste as compared to non-poor districts. A relative paucity of industry and commercial enterprise in poorer districts leads to less pollution from those sources than in areas with higher concentrations of industry and commerce. At the same time, household-level practices in poorer districts indicate a lack of experience with natural resource maintenance and management strategies. This lack of experience will need to be remedied via more intensive engagement in the development of damage recovery plans and natural resource endowment management plans.

Figure 24: Sources of air pollution (a), water pollution (b), and on site burning of agricultural waste (c)



4.3.3 Recommendations

Provisional FIA of SCBT-identified 'hotspot' policies help prioritize the household, community, village, and urban county locations that would benefit the most from these interventions. Households in poorer and more remote districts are more exposed *today* to the negative impacts of environmental degradation and a lack of publicly accessible and high-quality infrastructure (Figure 25). In the future, when climate change and concurrent environmental and physical infrastructure degradation occur more frequently, these same communities will experience the negative impacts more acutely and more intensively. The interventions in SCBT-identified `hotspots' in the Infrastructure, Securing Potable Water, post-Damage Recovery, and Damage Mitigation themes should be prioritized for these communities so that they do not fall further behind in economic, social, or human capital terms a result of climate change.

Empirical FIA estimates of the social welfare impact of `hotspot' intervention requires information on expenditure magnitudes by intervention location and "fiscal rules" governing these interventions. This additional information was not available during the course of this SCBT collaboration with BKF. Were this information available, FIA could provide an estimate of how well the policies in question are reaching the target populations described above with meaningful benefits and support for adapting to or mitigating the negative impacts of climate change and related weather and environmental phenomena.

Figure 25: Poor vs. Non-Poor districts across various environmental risk factors

District type	% with dependence on forest cover	% burning agri-waste	% saying factory is a source of pollution	% with natural disaster warning system in area	% using Asphalt/ concrete road
Poor	88%	69%	78%	4%	50%
Non-Poor	68%	26%	69%	11%	84%

05
Using SCBT results to inform budgetary decisions: process analysis in Indonesia

A key advantage of the SCBT is that it can make use of existing CBT processes to ensure effective consideration of results by decision makers. As an additional layer of analysis to the CBT, the SCBT should ideally be conducted for each budget line as soon as they have been tagged as climate-related by the CBT process. This way, civil servants in charge of CBT will gain knowledge of the interplay between climate and social issues, the likely social effects of climate measures will be communicated through the budget cycle to key policymakers, and the full SCBT results will be released along CBT results. While it is more effective to conduct the SCBT at the same time as the CBT, the SCBT analysis needs not to be conducted every year like the CBT. Rather, results from past years can be carried over in the CBT process to later years. This is because social issues vary less over time than climate issues. Additionally, this limits the institutional capacity to be mobilized for the SCBT. Ideally, the SCBT should be renewed every three to five years. Conducting the SCBT as a standalone exercise will deliver useful information, but it is less likely to influence policy making.

A 'sine qua non' condition for the effectiveness of the SCBT if it is applied as an extension of the CBT is for CBT processes themselves to be robust and well-integrated in the budget cycle. A 'process analysis' on the CBT can reveal strengths and weaknesses of existing CBT prior to the uptake of the SCBT tool. It consists of looking closely at the administrative structures, key policymakers and politicians, timing, communication channels, human resources, and IT systems involved in the elaboration of the CBT. Recommendations on how to best introduce the SCBT, and possibly elements to put in place prior to the introduction of the tool can thereby be identified.

I4CE conducted a 'process analysis' to understand how the SCBT could be introduced in Indonesia on the basis of the existing CBT. It was realized through a survey and interviews with civil servants. A first and essential finding is that the CBT process in Indonesia closely follows the budget preparation for the next year. This creates opportunities for CBT results to inform budgetary decision making, especially if performance-based budgeting is in place. One caveat in practice is that planned and executed budgets for a same year can vary quite significantly, and CBT results are much less likely to be considered as revisions to the planned budget are undertaken during the execution year. If following the same process as the CBT, but with new results only every three-to-five years, the SCBT could be used to inform revisions to the budget in execution.

Survey results and interviews reveal that the CBT is effective at raising awareness about climate issues at the level of civil servants, with an unknown effect on the awareness of high-level decision makers. Survey respondents in line ministries and in the Ministry of Finance acknowledge that CBT methodological guidebooks and training delivered by the Ministry of Finance have increased their knowledge about climate mitigation and climate adaptation policies in Indonesia, in the meantime informing them about current climate challenges. Climate tagging has also given them insight into the specific climate effects of budgets lines and programs on which they work on a regular basis. Introducing the SCBT could therefore raise awareness about social issues, and the interplay of climate and social issues in Indonesia at large, and on specific budget items, for civil servants in the Ministry of Finance and line ministries. This is an important first step to informing higher-level decision making, even though it is yet unclear whether and how CBT results affect the level of knowledge of climate issues at the highest levels.

Dissemination of results is an important part of the CBT process in Indonesia, informing key stakeholders and the public. However, the Parliament does not typically use CBT results as part of its budget preparation oversight role. Every year, BKF publishes CBT results on its website and on social media platforms. This contributes to informing civil servants, politicians, Civil Society Organizations (CSOs), and the general public. This is an important step as all these actors can further contribute to triggering changes in budget lines to make sure they meet climate objectives. Parliament, which is most able to make changes to budget lines after the initial budget draft is released given its budget oversight role, is not particularly targeted however. Communicating SCBT results through the same channels as the CBT would be beneficial and raise awareness. It could also be key to trigger change to present SCBT results to Parliament, if not every year, then at least once after each occurrence of the SCBT.

Introducing the SCBT through the CBT process along with additional communication efforts, notably to Parliament, could give impetus to the development of strategies to tackle issues jointly. If they do not respond to comprehensive strategies and objectives, the CBT and SCBT only help address issues on a policy-by-policy basis. Developing a comprehensive, whole-of-government strategy to address climate and social issues jointly will be key to progress towards climate and social objectives in an efficient and effective manner. CBT and SCBT results will provide helpful information to decision makers in their endeavor to develop such a strategy.

Conclusion

"The results from the SCBT analysis provide decision-makers in Indonesia with new information to help identify which climate policies are attached to 'social hotspots' and need to be analysed in more detail, strengthened or reformed."

The application of an innovative tool – the Social Climate Budget Tagging, or SCBT, developed by I4CE – on existing Climate Budget Tagging results provides decision makers with additional information to help them ensure climate policies contribute to resolving social issues and are socially just. In turn these criteria may increase their acceptability.

In the case of Indonesia, the SCBT highlights already known facts, but which were lacking clear specifications: climate and social issues are intimately intertwined, and need to be tackled jointly to ensure co-benefits are maximized, and adverse social side-effects of climate policies are avoided. The results from the SCBT analysis provide decision-makers in Indonesia with new information to help identify which climate policies are attached to 'social hotspots' and need to be analysed in more detail, strengthened or reformed.

The SCBT is applicable to all country contexts – developing or developed – by governments or CSOs already conducting Climate Budget Tagging. Results could generate the momentum needed to maximize policies with climate and social co-benefits, reform climate policies that are harmful to social issues, and overall progress towards the achievement of both climate and social objectives.

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APPENDICES:

Appendix 1: List of the poorest districts (20% or more poor by consumable income)

Province	District	Province	District	Province	District	Province	District	Province	District
Aceh	Aceh Barat	Bali	Klungkung	DKI Yogyakarta	Sleman	Jawa Barat	Kota Bekasi	Jawa Tengah	Kota Pekalongan
Aceh	Aceh Barat Daya	Bali	Kota Denpasar	Gorontalo	Boalemo	Jawa Barat	Kota Bogor	Jawa Tengah	Kota Salatiga
Aceh	Aceh Besar	Bali	Tabanan	Gorontalo	Bone Bolango	Jawa Barat	Kota Cimahi	Jawa Tengah	Kota Semarang
Aceh	Aceh Jaya	Banten	Kota Cilegon	Gorontalo	Gorontalo	Jawa Barat	Kota Cirebon	Jawa Tengah	Kota Surakarta
Aceh	Aceh Selatan	Banten	Kota Serang	Gorontalo	Gorontalo Utara	Jawa Barat	Kota Depok	Jawa Tengah	Kota Tegal
Aceh	Aceh Singkil	Banten	Kota Tangerang	Gorontalo	Kota Gorontalo	Jawa Barat	Kota Sukabumi	Jawa Tengah	Kudus
Aceh	Aceh Tamiang	Banten	Kota Tangerang Selatan	Gorontalo	Pohuwato	Jawa Barat	Kota Tasikmalaya	Jawa Tengah	Magelang
Aceh	Aceh Tengah	Banten	Lebak	Jambi	Batang Hari	Jawa Barat	Kuningan	Jawa Tengah	Pati
Aceh	Aceh Tenggara	Banten	Pandeglang	Jambi	Bungo	Jawa Barat	Majalengka	Jawa Tengah	Pekalongan
Aceh	Aceh Timur	Banten	Serang	Jambi	Kerinci	Jawa Barat	Pangandaran	Jawa Tengah	Pemalang
Aceh	Aceh Utara	Banten	Tangerang	Jambi	Kota Jambi	Jawa Barat	Purwakarta	Jawa Tengah	Purbalingga
Aceh	Bener Meriah	Bengkulu	Bengkulu Selatan	Jambi	Kota Sungai Penuh	Jawa Barat	Subang	Jawa Tengah	Purworejo
Aceh	Bireuen	Bengkulu	Bengkulu Tengah	Jambi	Merangin	Jawa Barat	Sukabumi	Jawa Tengah	Rembang
Aceh	Gayo Lues	Bengkulu	Bengkulu Utara	Jambi	Muaro Jambi	Jawa Barat	Sumedang	Jawa Tengah	Semarang
Aceh	Kota Banda Aceh	Bengkulu	Kaur	Jambi	Sarolangun	Jawa Barat	Tasikmalaya	Jawa Tengah	Sragen
Aceh	Kota Langsa	Bengkulu	Kota Bengkulu	Jambi	Tanjung Jabung Barat	Jawa Tengah	Banjarnegara	Jawa Tengah	Sukoharjo
Aceh	Kota Lhokseumawe	Bengkulu	Lebong	Jambi	Tanjung Jabung Timur	Jawa Tengah	Banyumas	Jawa Tengah	Tegal
Aceh	Kota Sabang	Bengkulu	Mukomuko	Jambi	Tebo	Jawa Tengah	Batang	Jawa Tengah	Temanggung
Aceh	Kota Subulussalam	Bengkulu	Rejang Lebong	Jawa Barat	Bandung	Jawa Tengah	Blora	Jawa Tengah	Wonogiri
Aceh	Nagan Raya	Bengkulu	Seluma	Jawa Barat	Bandung Barat	Jawa Tengah	Boyolali	Jawa Tengah	Wonosobo
Aceh	Pidie	DKI Jakarta	Kepulauan Seribu	Jawa Barat	Bekasi	Jawa Tengah	Brebes	Jawa Timur	Bangkalan
Aceh	Pidie Jaya	DKI Jakarta	Kota Jakarta Barat	Jawa Barat	Bogor	Jawa Tengah	Cilacap	Jawa Timur	Banyuwangi
Aceh	Simeulue	DKI Jakarta	Kota Jakarta Pusat	Jawa Barat	Ciamis	Jawa Tengah	Demak	Jawa Timur	Blitar
Bali	Badung	DKI Jakarta	Kota Jakarta Selatan	Jawa Barat	Cianjur	Jawa Tengah	Grobogan	Jawa Timur	Bojonegoro
Bali	Bangli	DKI Jakarta	Kota Jakarta Timur	Jawa Barat	Cirebon	Jawa Tengah	Jepara	Jawa Timur	Bondowoso
Bali	Buleleng	DKI Jakarta	Kota Jakarta Utara	Jawa Barat	Garut	Jawa Tengah	Karanganyar	Jawa Timur	Gresik
Bali	Gianyar	DKI Yogyakarta	Bantul	Jawa Barat	Indramayu	Jawa Tengah	Kebumen	Jawa Timur	Jember
Bali	Jembrana	DKI Yogyakarta	Gunung Kidul	Jawa Barat	Karawang	Jawa Tengah	Kendal	Jawa Timur	Jombang
Bali	Karangasem	DKI Yogyakarta	Kota Yogyakarta	Jawa Barat	Kota Bandung	Jawa Tengah	Klaten	Jawa Timur	Kediri
Jawa Timur	Kota Blitar	DKI Yogyakarta	Kulon Progo	Jawa Barat	Kota Banjar	Jawa Tengah	Kota Magelang	Jawa Timur	Kota Batu
Jawa Timur	Kota Kediri	Kalimantan Barat	Bengkayang	Kalimantan Tengah	Gunung Mas	Kep. Bangka Belitung	Belitung	Maluku	Kepulauan Tanimbar
Jawa Timur	Kota Madiun	Kalimantan Barat	Kapuas Hulu	Kalimantan Tengah	Kapuas	Kep. Bangka Belitung	Belitung Timur	Maluku	Kota Ambon
Jawa Timur	Kota Malang	Kalimantan Barat	Kayong Utara	Kalimantan Tengah	Katingan	Kep. Bangka Belitung	Kota Pangkalpinang	Maluku	Kota Tual
Jawa Timur	Kota Mojokerto	Kalimantan Barat	Ketapang	Kalimantan Tengah	Kota Palangka Raya	Kep. Riau	Bintan	Maluku	Maluku Tengah
Jawa Timur	Kota Pasuruan	Kalimantan Barat	Kota Pontianak	Kalimantan Tengah	Kotawaringin Barat	Kep. Riau	Karimun	Maluku	Maluku Tenggara

Province	District	Province	District	Province	District	Province	District	Province	District
Jawa Timur	Kota Probolinggo	Kalimantan Barat	Kota Singkawang	Kalimantan Tengah	Kotawaringin Timur	Kep. Riau	Kepulauan Anambas	Maluku	Seram Bagian Timur
Jawa Timur	Kota Surabaya	Kalimantan Barat	Kubu Raya	Kalimantan Tengah	Lamandau	Kep. Riau	Kota B A T A M	Maluku Utara	Halmahera Barat
Jawa Timur	Lamongan	Kalimantan Barat	Landak	Kalimantan Tengah	Murung Raya	Kep. Riau	Kota Tanjung Pinang	Maluku Utara	Halmahera Selatan
Jawa Timur	Lumajang	Kalimantan Barat	Melawi	Kalimantan Tengah	Pulang Pisau	Kep. Riau	Lingga	Maluku Utara	Halmahera Tengah
Jawa Timur	Madiun	Kalimantan Barat	Mempawah	Kalimantan Tengah	Seruyan	Kep. Riau	Natuna	Maluku Utara	Halmahera Timur
Jawa Timur	Magetan	Kalimantan Barat	Sambas	Kalimantan Tengah	Sukamara	Lampung	Kota Bandar Lampung	Maluku Utara	Halmahera Utara
Jawa Timur	Malang	Kalimantan Barat	Sanggau	Kalimantan Timur	Berau	Lampung	Kota Metro	Maluku Utara	Kepulauan Sula
Jawa Timur	Mojokerto	Kalimantan Barat	Sekadau	Kalimantan Timur	Kota Balikpapan	Lampung	Lampung Barat	Maluku Utara	Kota Ternate
Jawa Timur	Nganjuk	Kalimantan Barat	Sintang	Kalimantan Timur	Kota Bontang	Lampung	Lampung Selatan	Maluku Utara	Kota Tidore Kepulauan
Jawa Timur	Ngawi	Kalimantan Selatan	Balangan	Kalimantan Timur	Kota Samarinda	Lampung	Lampung Tengah	Maluku Utara	Pulau Morotai
Jawa Timur	Pacitan	Kalimantan Selatan	Banjar	Kalimantan Timur	Kutai Barat	Lampung	Lampung Timur	Maluku Utara	Pulau Taliabu
Jawa Timur	Pamekasan	Kalimantan Selatan	Barito Kuala	Kalimantan Timur	Kutai Kartanegara	Lampung	Lampung Utara	Nusa Tenggar Timur	Alor
Jawa Timur	Pasuruan	Kalimantan Selatan	Hulu Sungai Selatan	Kalimantan Timur	Kutai Timur	Lampung	Mesuji	Nusa Tenggar Timur	Ende
Jawa Timur	Ponorogo	Kalimantan Selatan	Hulu Sungai Tengah	Kalimantan Timur	Mahakam Hulu	Lampung	Pesawaran	Nusa Tenggar Timur	Flores Timur
Jawa Timur	Probolinggo	Kalimantan Selatan	Hulu Sungai Utara	Kalimantan Timur	Paser	Lampung	Pesisir Barat	Nusa Tenggar Timur	Kota Kupang
Jawa Timur	Sampang	Kalimantan Selatan	Kota Banjar Baru	Kalimantan Timur	Penajam Paser Utara	Lampung	Pringsewu	Nusa Tenggar Timur	Kupang
Jawa Timur	Sidoarjo	Kalimantan Selatan	Kota Banjarmasin	Kalimantan Utara	Bulungan	Lampung	Tanggamus	Nusa Tenggar Timur	Manggarai
Jawa Timur	Situbondo	Kalimantan Selatan	Kotabaru	Kalimantan Utara	Kota Tarakan	Lampung	Tulang Bawang Barat	Nusa Tenggar Timur	Manggarai Barat
Jawa Timur	Sumenep	Kalimantan Selatan	Tabalong	Kalimantan Utara	Malinau	Lampung	Tulangbawang	Nusa Tenggar Timur	Manggarai Timur
Jawa Timur	Trenggalek	Kalimantan Selatan	Tanah Bumbu	Kalimantan Utara	Nunukan	Lampung	Way Kanan	Nusa Tenggar Timur	Nagekeo
Jawa Timur	Tuban	Kalimantan Selatan	Tanah Laut	Kalimantan Utara	Tana Tidung	Maluku	Buru	Nusa Tenggar Timur	Ngada
Jawa Timur	Tulungagung	Kalimantan Selatan	Tapin	Kep. Bangka Belitung	Bangka	Maluku	Kepulauan Aru	Nusa Tenggar Timur	Rote Ndao
Nusa Tenggar Timur	Timor Tengah Selatan	Kalimantan Tengah	Barito Selatan	Kep. Bangka Belitung	Bangka Barat	Sulawesi Tenggara	Kolaka Timur	Nusa Tenggar Timur	Sabu Raijua
Nusa Tenggar Timur	Timor Tengah Utara	Kalimantan Tengah	Barito Timur	Kep. Bangka Belitung	Bangka Selatan	Sulawesi Tenggara	Kolaka Utara	Nusa Tenggar Timur	Sikka
Nusa Tenggara Barat	Bima	Kalimantan Tengah	Barito Utara	Kep. Bangka Belitung	Bangka Tengah	Sulawesi Tenggara	Konawe	Nusa Tenggar Timur	Sumba Timur
Nusa Tenggara Barat	Dompu	Papua Barat	Kaimana	Sulawesi Selatan	Kota Makassar	Sulawesi Tenggara	Konawe Kepulauan	Sumatera Barat	Kota Pariaman
Nusa Tenggara Barat	Kota Bima	Papua Barat	Kota Sorong	Sulawesi Selatan	Kota Palopo	Sulawesi Tenggara	Konawe Selatan	Sumatera Barat	Kota Payakumbuh
Nusa Tenggara Barat	Kota Mataram	Papua Barat	Manokwari	Sulawesi Selatan	Kota Parepare	Sulawesi Tenggara	Konawe Utara	Sumatera Barat	Kota Sawah Lunto
Nusa Tenggara Barat	Lombok Barat	Papua Barat	Sorong	Sulawesi Selatan	Luwu	Sulawesi Tenggara	Kota Baubau	Sumatera Barat	Kota Solok
Nusa Tenggara Barat	Lombok Tengah	Papua Barat	Teluk Bintuni	Sulawesi Selatan	Luwu Timur	Sulawesi Tenggara	Kota Kendari	Sumatera Barat	Lima Puluh Kota
Nusa Tenggara Barat	Lombok Timur	Riau	Bengkalis	Sulawesi Selatan	Luwu Utara	Sulawesi Tenggara	Muna	Sumatera Barat	Padang Pariaman
Nusa Tenggara Barat	Lombok Utara	Riau	Indragiri Hilir	Sulawesi Selatan	Maros	Sulawesi Tenggara	Muna Barat	Sumatera Barat	Pasaman
Nusa Tenggara Barat	Sumbawa	Riau	Indragiri Hulu	Sulawesi Selatan	Pangkajene Dan Kepulauan	Sulawesi Tenggara	Wakatobi	Sumatera Barat	Pasaman Barat

Province	District	Province	District	Province	District	Province	District	Province	District
Nusa Tenggara Barat	Sumbawa Barat	Riau	Kampar	Sulawesi Selatan	Pinrang	Sulawesi Utara	Bolaang Mongondow	Sumatera Barat	Pesisir Selatan
Papu	Asmat	Riau	Kepulauan Meranti	Sulawesi Selatan	Sidenreng Rappang	Sulawesi Utara	Bolaang Mongondow Selatan	Sumatera Barat	Sijunjung
Papu	Boven Digoel	Riau	Kota D U M A I	Sulawesi Selatan	Sinjai	Sulawesi Utara	Bolaang Mongondow Timur	Sumatera Barat	Solok
Papu	Jayapura	Riau	Kota Pekanbaru	Sulawesi Selatan	Soppeng	Sulawesi Utara	Bolaang Mongondow Utara	Sumatera Barat	Solok Selatan
Papu	Jayawijaya	Riau	Kuantan Singingi	Sulawesi Selatan	Takalar	Sulawesi Utara	Kepulauan Sangihe	Sumatera Barat	Tanah Datar
Papu	Kepulauan Yapen	Riau	Pelalawan	Sulawesi Selatan	Tana Toraja	Sulawesi Utara	Kepulauan Talaud	Sumatera Selatan	Banyu Asin
Papu	Kota Jayapura	Riau	Rokan Hilir	Sulawesi Selatan	Toraja Utara	Sulawesi Utara	Kota Bitung	Sumatera Selatan	Empat Lawang
Papu	Lanny Jaya	Riau	Rokan Hulu	Sulawesi Selatan	Wajo	Sulawesi Utara	Kota Kotamobagu	Sumatera Selatan	Kota Lubuklinggau
Papu	Mamberamo Tengah	Riau	S I A K	Sulawesi Tengah	Banggai	Sulawesi Utara	Kota Manado	Sumatera Selatan	Kota Pagar Alam
Papu	Mappi	Sulawesi Barat	Majene	Sulawesi Tengah	Banggai Kepulauan	Sulawesi Utara	Kota Tomohon	Sumatera Selatan	Kota Palembang
Papu	Merauke	Sulawesi Barat	Mamasa	Sulawesi Tengah	Banggai Laut	Sulawesi Utara	Minahasa	Sumatera Selatan	Kota Prabumulih
Papu	Mimika	Sulawesi Barat	Mamuju	Sulawesi Tengah	Kota Palu	Sulawesi Utara	Minahasa Selatan	Sumatera Selatan	Lahat
Papu	Nabire	Sulawesi Barat	Mamuju Tengah	Sulawesi Tengah	Morowali	Sulawesi Utara	Minahasa Tenggara	Sumatera Selatan	Muara Enim
Papu	Nduga	Sulawesi Barat	Pasangkayu	Sulawesi Tengah	Morowali Utara	Sulawesi Utara	Minahasa Utara	Sumatera Selatan	Musi Banyuasin
Papu	Pegunungan Bintang	Sulawesi Barat	Polewali Mandar	Sulawesi Tengah	Poso	Sulawesi Utara	Siau Tagulandang Biaro	Sumatera Selatan	Musi Rawas
Papu	Sarmi	Sulawesi Selatan	Bantaeng	Sulawesi Tengah	Sigi	Sumatera Barat	Agam	Sumatera Selatan	Musi Rawas Utara
Papu	Supiori	Sulawesi Selatan	Barru	Sulawesi Tengah	Tojo Una-una	Sumatera Barat	Dharmasraya	Sumatera Selatan	Ogan Ilir
Papu	Waropen	Sulawesi Selatan	Bone	Sulawesi Tenggara	Bombana	Sumatera Barat	Kepulauan Mentawai	Sumatera Selatan	Ogan Komering Ilir
Papu	Yahukimo	Sulawesi Selatan	Bulukumba	Sulawesi Tenggara	Buton	Sumatera Barat	Kota Bukittinggi	Sumatera Selatan	Ogan Komering Ulu
Papua Barat	Fakfak	Sulawesi Selatan	Enrekang	Sulawesi Tenggara	Buton Selatan	Sumatera Barat	Kota Padang	Sumatera Selatan	Ogan Komering Ulu Selatan
Sumatera Utara	Karo	Sulawesi Selatan	Gowa	Sulawesi Tenggara	Buton Tengah	Sumatera Barat	Kota Padang Panjang	Sumatera Selatan	Ogan Komering Ulu Timur
Sumatera Utara	Kota Binjai	Sulawesi Selatan	Jeneponto	Sulawesi Tenggara	Buton Utara			Sumatera Selatan	Penukal Abab Lematang Ilir
Sumatera Utara	Kota Gunungsitoli	Sulawesi Selatan	Kepulauan Selayar	Sulawesi Tenggara	Kolaka			Sumatera Utara	Asahan
Sumatera Utara	Kota Medan	Bengkulu	Rejang Lebong	Papu	Dogiyai			Sumatera Utara	Batu Bara
Sumatera Utara	Kota Padang Sidempuan	Bengkulu	Seluma	Papu	Intan Jaya			Sumatera Utara	Dairi
Sumatera Utara	Kota Pematangsiantar	Gorontalo	Boalemo	Papu	Jayapura			Sumatera Utara	Deli Serdang
Sumatera Utara	Kota Sibolga	Gorontalo	Gorontalo Utara	Papu	Jayawijaya			Sumatera Utara	Humbang Hasundutan
Sumatera Utara	Kota Tanjung Balai	Gorontalo	Pohuwato	Papu	Keerom				
Sumatera Utara	Kota Tebing Tinggi	Maluku	Buru Selatan	Papu	Kepulauan Yapen				
Sumatera Utara	Labuhan Batu	Maluku	Kepulauan Aru	Papu	Mamberamo Raya				
Sumatera Utara	Labuhan Batu Selatan	Maluku	Kepulauan Tanimbar	Papu	Mappi				
Sumatera Utara	Labuhan Batu Utara	Maluku	Maluku Barat Daya	Papu	Merauke				
Sumatera Utara	Langkat	Maluku	Maluku Tengah	Papu	Mimika				
Sumatera Utara	Mandailing Natal	Maluku	Maluku Tenggara	Papu	Nabire				

Province	District	Province	District	Province	District	Province	District	Province	District
Sumatera Utara	Nias	Maluku	Seram Bagian Barat	Papu	Paniai				
Sumatera Utara	Nias Barat	Maluku	Seram Bagian Timur	Papu	Puncak				
Sumatera Utara	Nias Selatan	Nusa Tenggar Timur	Alor	Papu	Puncak Jaya				
Sumatera Utara	Nias Utara	Nusa Tenggar Timur	Belu	Papu	Sarmi				
Sumatera Utara	Padang Lawas	Nusa Tenggar Timur	Flores Timur	Papu	Supiori				
Sumatera Utara	Padang Lawas Utara	Nusa Tenggar Timur	Kupang	Papu	Tolikara				
Sumatera Utara	Pakpak Bharat	Nusa Tenggar Timur	Lembata	Papu	Waropen				
Sumatera Utara	Samosir	Nusa Tenggar Timur	Malaka	Papu	Yahukimo				
Sumatera Utara	Serdang Bedagai	Nusa Tenggar Timur	Nagekeo	Papu	Yalimo				
Sumatera Utara	Simalungun	Nusa Tenggar Timur	Rote Ndao	Papua Barat	Fakfak				
Sumatera Utara	Tapanuli Selatan	Nusa Tenggar Timur	Sabu Raijua	Papua Barat	Kaimana				
Sumatera Utara	Tapanuli Tengah	Nusa Tenggar Timur	Sikka	Papua Barat	Manokwari				
Sumatera Utara	Tapanuli Utara	Nusa Tenggar Timur	Sumba Barat	Papua Barat	Manokwari Selatan				
Sumatera Utara	Toba Samosir	Nusa Tenggar Timur	Sumba Barat Daya	Papua Barat	Maybrat				
Bengkulu	Kaur	Nusa Tenggar Timur	Sumba Tengah	Papua Barat	Pegunungan Arfak				
Bengkulu	Kepahiang	Nusa Tenggar Timur	Sumba Timur	Papua Barat	Raja Ampat				
Bengkulu	Lebong	Nusa Tenggar Timur	Timor Tengah Selatan	Papua Barat	Sorong				
		Nusa Tenggar Timur	Timor Tengah Utara	Papua Barat	Sorong Selatan				
		Papu	Asmat	Papua Barat	Tambrauw				
		Papu	Biak Numfor	Papua Barat	Teluk Bintuni				
		Papu	Boven Digoel	Papua Barat	Teluk Wondama				
		Papu	Deiyai	Sulawesi Tengah	Banggai Kepulauan				
				Sulawesi Tengah	Banggai Laut				
				Sulawesi Tengah	Buol				
				Sulawesi Tengah	Donggala				
				Sulawesi Tengah	Parigi Moutong				
				Sulawesi Tengah	Tojo Una-una				
				Sulawesi Tengah	Toli-toli				


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